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UK METEOROLOGICAL OFFICE
GLOBAL DATA MONITORING REPORT

September 2001

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1and 2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or sea surface temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Bracknell and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.
N.B. The sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

Figures 40-54 show sounding statistics from the polar orbitting satellite NOAA-16. Figure 40 shows the mean daily number of ATOVS soundings, and figures 41-54 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.
N.B. The sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

Figure		Weighting function peak (hPa)
41	Mean	Surface (HIRS8)
42	SD	Surface (HIRS8)
43	Mean	700 (HIRS15)
44	SD	700 (HIRS15)
45	Mean	500-700 (HIRS11)
46	SD	500-700 (HIRS11)
47	Mean	400 (HIRS4)
48	SD	400 (HIRS4)
49	Mean	700 (AMSUA5)
50	SD	700 (AMSUA5)
51	Mean	300 (AMSUA7)
52	SD	300 (AMSUA7)
53	Mean	100 (AMSUA9)
54	RMS	100 (AMSUA9)

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).
21. September 2000. Corrected an error affecting the mean positions of a minority of buoys in Table 2.
22. November 2000. An error in the production of Table 6 was corrected. Previously, some sondes with suspect vector winds were being missed.
23. April 2001. Included statistics for ATOVS sounding data from NOAA-16.
24. May 2001. Included statistics for sea surface temperatures from marine surface observations.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: September 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from UKMO global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed ($\mathrm{m\ s^{-1}}$).
:Wind direction (Degrees).
:Sea surface temperature (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the wind observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 $\mathrm{m\ s^{-1}}$ (vector wind)
:10 degrees (sea surface temperature)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

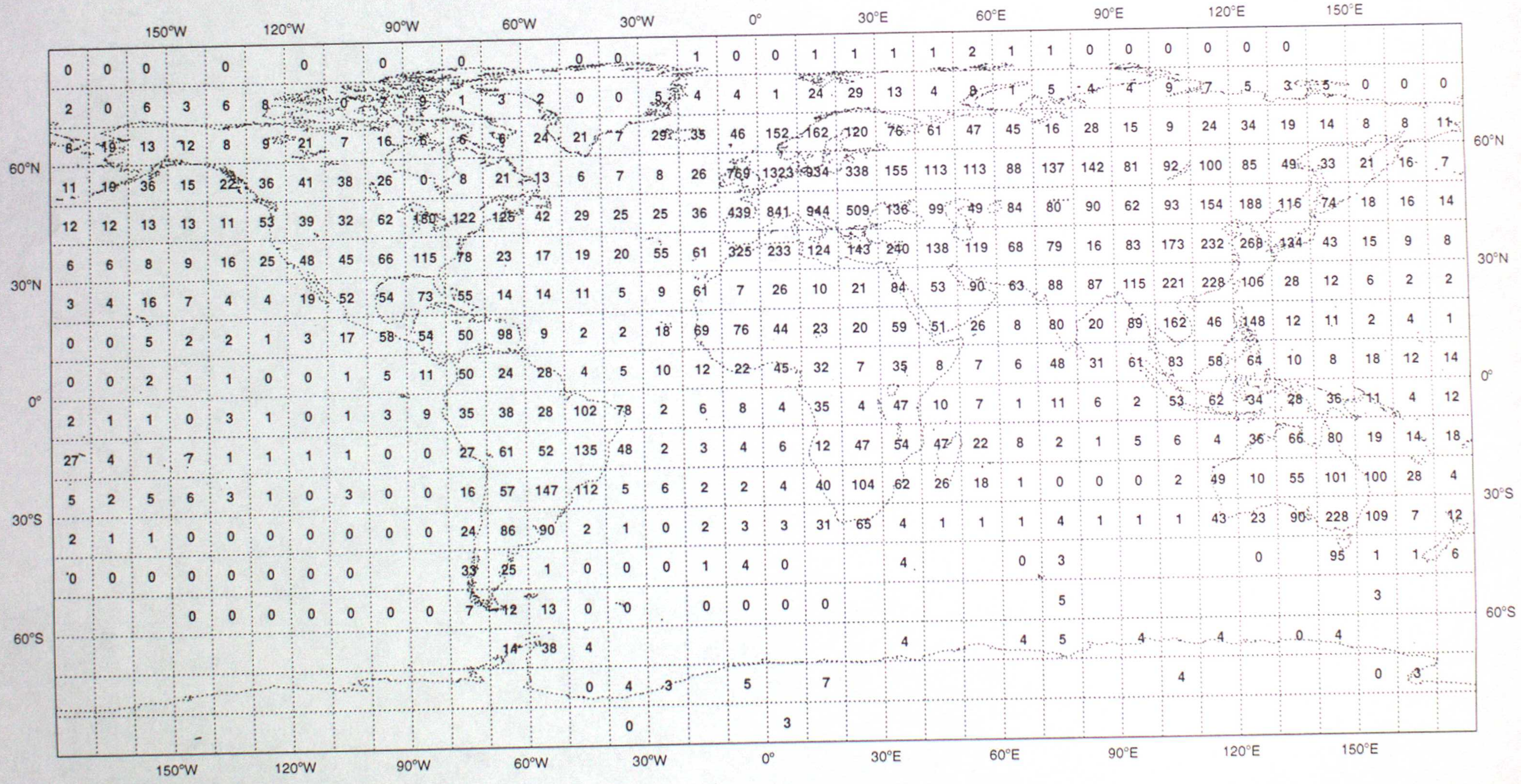
1.|bias|	≥ 4 hPa	(pressure),
	≥ 5 $\mathrm{m\ s^{-1}}$	(wind speed),
	≥ 30 degrees	(direction).
	≥ 3 degrees	(sea surface temperature).
2.SD	≥ 6 hPa	(pressure),
	≥ 80 degrees	(direction).
	≥ 5 degrees	(sea surface temperature).
3.PGE	≥ 25	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $\mathrm{m\ s^{-1}}$

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
CGDS	ALL	P	SUR	144	27	19	8.1	0.8	8.1
CYLX	ALL	P	SUR	24	11	46	2.8	-13.0	13.3
C6LU3	ALL	P	SUR	67	0	0	1.5	5.2	5.4
C6QY4	ALL	P	SUR	27	0	0	1.3	-4.0	4.2
ELJL8	ALL	P	SUR	41	3	7	4.2	4.5	6.2
ELQA8	ALL	P	SUR	21	0	0	0.9	-4.0	4.1
ELRR2	ALL	P	SUR	25	0	0	0.8	-4.5	4.5
ELTX9	ALL	P	SUR	56	25	45	3.3	-0.9	3.4
ELVJ9	ALL	P	SUR	22	0	0	0.8	-4.3	4.4
ELWR	ALL	P	SUR	73	6	8	1.0	-11.8	11.9
FGTO	ALL	P	SUR	107	23	21	7.0	-3.3	7.7
FNWV	ALL	P	SUR	42	5	12	5.3	-4.2	6.8
HPIZ	ALL	P	SUR	26	0	0	1.1	-4.0	4.2
KMLD	ALL	P	SUR	30	0	0	0.8	12.1	12.1
KS002	ALL	P	SUR	36	25	69	3.8	-10.4	11.1
LAXS2	ALL	P	SUR	23	1	4	4.3	9.5	10.4
MVLA	ALL	P	SUR	57	0	0	4.9	5.6	7.4
OUSE6	ALL	P	SUR	25	0	0	2.3	-5.2	5.7
OZZB2	ALL	P	SUR	55	15	27	4.3	6.0	7.4
PDLF	ALL	P	SUR	43	0	0	0.6	-4.4	4.5
PECF	ALL	P	SUR	48	1	2	2.9	-5.1	5.8
UANF	ALL	P	SUR	30	0	0	1.5	-4.6	4.9
UHLE	ALL	P	SUR	74	0	0	1.1	-9.5	9.6
VGDX	ALL	P	SUR	36	0	0	1.6	-4.3	4.6
VVGC	ALL	P	SUR	23	2	9	2.5	6.9	7.3
VVMA	ALL	P	SUR	32	0	0	1.4	4.5	4.8
V7BW9	ALL	P	SUR	48	0	0	0.7	-4.9	4.9
WCV7620	ALL	P	SUR	22	0	0	1.0	4.7	4.8
16051	ALL	P	SUR	92	92	100			
3FHF8	ALL	P	SUR	23	0	0	0.8	-4.3	4.4
4XGV	ALL	P	SUR	21	0	0	1.5	6.1	6.3
62137	ALL	P	SUR	79	0	0	2.3	-5.1	5.6
9MBW	ALL	P	SUR	38	0	0	2.0	-10.2	10.4
WIND SPEED									
C6NI3	ALL	SPEED	SUR	28	0	0	3.7	6.2	7.2
ELWG8	ALL	SPEED	SUR	36	2	6	5.4	9.6	11.0
ELWP8	ALL	SPEED	SUR	47	0	0	5.7	8.0	9.9
KS000	ALL	SPEED	SUR	24	7	29	5.5	4.2	6.9
KS002	ALL	SPEED	SUR	38	2	5	3.9	7.8	8.7
OWRN2	ALL	SPEED	SUR	35	2	6	6.2	11.1	12.7
OZWP2	ALL	SPEED	SUR	44	1	2	5.5	5.8	8.0
PJVQ	ALL	SPEED	SUR	40	0	0	4.9	5.0	7.0
P3YS5	ALL	SPEED	SUR	37	0	0	3.7	5.2	6.4
ZTSG	ALL	SPEED	SUR	52	2	4	5.2	5.2	7.4
3ESP7	ALL	SPEED	SUR	38	0	0	3.7	6.5	7.5
62109	ALL	SPEED	SUR	269	0	0	3.1	-6.8	7.5
9MBW	ALL	SPEED	SUR	39	0	0	6.5	9.3	11.4
WIND DIRECTION									
BBXX KS0	ALL	DIRN.	SUR	28	8	29	91.6	-18.2	93.4
DDFO	ALL	DIRN.	SUR	24	0	0	40.4	30.0	50.4
ELVZ8	ALL	DIRN.	SUR	20	0	0	52.9	-40.3	66.5
ELXX4	ALL	DIRN.	SUR	27	1	4	82.6	12.7	83.6
KS002	ALL	DIRN.	SUR	25	2	8	43.3	-59.8	73.9
KS004	ALL	DIRN.	SUR	36	12	33	82.8	11.4	83.6
V2AF1	ALL	DIRN.	SUR	38	0	0	86.6	8.4	87.0
ZCBV8	ALL	DIRN.	SUR	35	0	0	28.9	-42.0	51.0
43301	ALL	DIRN.	SUR	51	0	0	32.0	-37.2	49.0

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
SEA SURFACE TEMPERATURE									
CGDS	ALL	SST	SUR	144	98	68	1.1	0.9	1.4
CG2464	ALL	SST	SUR	20	6	30	1.3	5.4	5.5
CG8048	ALL	SST	SUR	58	57	98	0.0	-9.3	9.3
C6MS4	ALL	SST	SUR	26	0	0	1.1	-4.8	5.0
C6MX4	ALL	SST	SUR	53	0	0	0.4	3.3	3.3
DBBI	ALL	SST	SUR	265	70	26	0.7	0.9	1.2
ELJL8	ALL	SST	SUR	39	0	0	1.6	5.5	5.8
ELKU8	ALL	SST	SUR	54	1	2	1.1	3.9	4.1
ELXZ6	ALL	SST	SUR	41	1	2	0.8	3.1	3.2
ELX03	ALL	SST	SUR	42	0	0	2.5	-3.0	3.9
H9GW	ALL	SST	SUR	35	0	0	1.7	3.4	3.8
JADY	ALL	SST	SUR	104	0	0	0.8	5.0	5.1
KIOH	ALL	SST	SUR	37	0	0	1.0	-4.4	4.5
KRHX	ALL	SST	SUR	59	0	0	1.5	-4.1	4.3
KRPB	ALL	SST	SUR	83	0	0	0.9	-5.3	5.3
KS000	ALL	SST	SUR	123	52	42	3.3	-0.2	3.3
LAEP4	ALL	SST	SUR	58	0	0	1.3	3.7	3.9
LAHV	ALL	SST	SUR	21	10	48	1.0	3.1	3.3
LAXS2	ALL	SST	SUR	23	15	65	2.7	-6.0	6.6
MZIF7	ALL	SST	SUR	38	0	0	2.1	-3.8	4.3
MZNM7	ALL	SST	SUR	34	0	0	0.4	-3.0	3.0
PBBS	ALL	SST	SUR	25	0	0	1.1	-3.0	3.2
PDIU	ALL	SST	SUR	32	0	0	1.6	-4.0	4.3
PDYI	ALL	SST	SUR	48	0	0	1.0	-3.3	3.5
PGRE	ALL	SST	SUR	23	0	0	1.8	-4.7	5.0
P3FY6	ALL	SST	SUR	36	0	0	1.4	3.5	3.8
P3ZY6	ALL	SST	SUR	24	0	0	1.0	-4.7	4.8
SIWB	ALL	SST	SUR	25	0	0	0.9	4.0	4.1
TSLN	ALL	SST	SUR	105	0	0	1.4	-5.2	5.4
TSMS	ALL	SST	SUR	34	0	0	1.8	-3.2	3.6
UCBP	ALL	SST	SUR	37	0	0	1.1	-4.0	4.2
UCDM	ALL	SST	SUR	42	0	0	2.1	-4.2	4.8
UHCK	ALL	SST	SUR	39	12	31	3.7	-2.4	4.4
UHLE	ALL	SST	SUR	75	0	0	1.1	-3.4	3.5
UIAC	ALL	SST	SUR	36	2	6	1.5	4.1	4.4
VCLM	ALL	SST	SUR	278	75	27	2.0	1.7	2.6
VGLZ	ALL	SST	SUR	32	32	100			
VGNW	ALL	SST	SUR	62	16	26	1.9	-0.3	1.9
VGPY	ALL	SST	SUR	30	9	30	1.2	0.2	1.3
VRUR7	ALL	SST	SUR	36	10	28	1.2	-1.0	1.5
WBHU	ALL	SST	SUR	39	1	3	1.4	3.6	3.9
WGJF	ALL	SST	SUR	20	0	0	2.5	-3.1	4.0
WGLA	ALL	SST	SUR	48	1	2	1.6	-4.8	5.1
WPGJ	ALL	SST	SUR	78	0	0	1.2	-3.1	3.3
WRGL	ALL	SST	SUR	30	2	7	0.8	-4.1	4.2
WZJD	ALL	SST	SUR	27	0	0	0.6	-3.2	3.3
ZQAY4	ALL	SST	SUR	55	0	0	2.9	-3.6	4.6
16051	ALL	SST	SUR	71	71	100			
23094	ALL	SST	SUR	26	0	0	2.3	-3.2	3.9
3ECM7	ALL	SST	SUR	90	0	0	1.7	4.7	5.0
3FIQ6	ALL	SST	SUR	38	18	47	2.1	2.5	3.2
45141	ALL	SST	SUR	712	712	100			
45145	ALL	SST	SUR	623	623	100			
45147	ALL	SST	SUR	716	716	100			
45148	ALL	SST	SUR	712	712	100			
45150	ALL	SST	SUR	707	707	100			
45152	ALL	SST	SUR	711	711	100			
46131	ALL	SST	SUR	717	717	100			
46146	ALL	SST	SUR	349	349	100			
46181	ALL	SST	SUR	717	717	100			
9WCX9	ALL	SST	SUR	30	0	0	0.4	3.6	3.6

Figure 1. SHIP/SYNOP mean daily count. SEPTEMBER 2001
Main hours only
Global average number of observations in 24 hours = 21459



0	0	0		0		0		0		0			0	0		1	0	0	1	1	1	1	2	1	1	0	0	0	0	0	0				
2	0	6	3	6	8		0	7	9	1	3	2	0	0	5	4	4	1	24	29	13	4	8	1	5	4	4	9	7	5	3	5	0	0	0
8	19	13	12	8	9	21	7	16	6	6	6	24	21	7	29	35	46	152	162	120	76	61	47	45	16	28	15	9	24	34	19	14	8	8	11
11	19	36	15	22	36	41	38	26	0	8	21	13	6	7	8	26	769	1323	934	338	155	113	113	88	137	142	81	92	100	85	49	33	21	16	7
12	12	13	13	11	53	39	32	62	180	122	125	42	29	25	25	36	439	841	944	509	136	99	49	84	80	90	62	93	154	188	116	74	18	16	14
6	6	8	9	16	25	48	45	66	115	78	23	17	19	20	55	61	325	233	124	143	240	138	119	68	79	16	83	173	232	268	134	43	15	9	8
3	4	16	7	4	4	19	52	54	73	55	14	14	11	5	9	61	7	26	10	21	84	53	90	63	88	87	115	221	228	106	28	12	6	2	2
0	0	5	2	2	1	3	17	58	54	50	98	9	2	2	18	69	76	44	23	20	59	51	26	8	80	20	89	162	46	148	12	11	2	4	1
0	0	2	1	1	0	0	1	5	11	50	24	28	4	5	10	12	22	45	32	7	35	8	7	6	48	31	61	83	58	64	10	8	18	12	14
2	1	1	0	3	1	0	1	3	9	35	38	28	102	78	2	6	8	4	35	4	47	10	7	1	11	6	2	53	62	34	28	36	11	4	12
27	4	1	7	1	1	1	1	0	0	27	61	52	135	48	2	3	4	6	12	47	54	47	22	8	2	1	5	6	4	36	66	80	19	14	18
5	2	5	6	3	1	0	3	0	0	16	57	147	112	5	6	2	2	4	40	104	62	26	18	1	0	0	0	2	49	10	55	101	100	28	4
2	1	1	0	0	0	0	0	0	0	24	86	90	2	1	0	2	3	3	31	65	4	1	1	1	4	1	1	1	43	23	90	228	109	7	12
0	0	0	0	0	0	0	0			33	25	1	0	0	0	1	4	0			4			0	3					0		95	1	1	6
			0	0	0	0	0	0	0	7	12	13	0	0		0	0	0	0						5								3		
											14	38	4								4			4	5		4		4		0	4			
													0	4	3		5		7									4					0	3	
														0				3																	

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: September 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoys.

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :00, 06, 12, 18 UTC

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (degrees).
:Sea surface temperature (degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the wind observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 m s^{-1} (vector wind)
:10 degrees (sea surface temperature)

SELECTION CRITERIA : NOBS ≥ 20 , and one or more of the following:

1.|bias|
≥ 4 hPa (pressure),
≥ 5 m s^{-1} (wind speed),
≥ 30 degrees (direction).
≥ 3 degrees (sea surface temperature).

2.SD
≥ 6 hPa (pressure),
≥ 80 degrees (direction).
≥ 5 degrees (sea surface temperature).

3.PGE ≥ 25.

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
14603	19.9	-85.3	ALL	P	SUR	142	112	79	3.1	-2.9	4.3
17532	61.7	-137.8	ALL	P	SUR	99	99	100			
17629	58.4	-157.6	ALL	P	SUR	51	38	75	6.9	-1.7	7.1
17630	59.9	-131.0	ALL	P	SUR	112	112	100			
21596	16.3	127.2	ALL	P	SUR	79	26	33	1.5	-1.0	1.8
21633	38.3	-77.0	ALL	P	SUR	109	109	100			
23516	21.5	92.0	ALL	P	SUR	80	1	1	8.5	-2.6	8.9
23931	5.9	80.6	ALL	P	SUR	209	141	67	5.9	6.9	9.1
25541	79.9	104.6	ALL	P	SUR	654	56	9	4.9	-5.0	7.1
25551	88.2	134.8	ALL	P	SUR	419	59	14	6.3	-2.6	6.8
41658	44.6	33.5	ALL	P	SUR	90	81	90	7.1	0.4	7.1
41660	44.6	33.5	ALL	P	SUR	87	76	87	10.1	1.9	10.3
46561	32.4	-168.2	ALL	P	SUR	228	0	0	0.6	-5.0	5.1
48584	48.6	-97.6	ALL	P	SUR	496	38	8	4.7	-6.1	7.7
65663	53.8	-36.1	ALL	P	SUR	300	3	1	6.0	2.9	6.6
WIND SPEED											
52522	35.2	-169.6	ALL	SPEED	SUR	140	0	0	2.0	-5.3	5.6
WIND DIRECTION											
41648	24.7	-72.3	ALL	DIRN.	SUR	202	1	0	22.3	32.5	39.4
52645	14.8	142.2	ALL	DIRN.	SUR	50	2	4	45.2	-45.0	63.8
SEA SURFACE TEMPERATURE											
12504	24.6	35.1	ALL	SST	SUR	154	9	6	5.2	0.7	5.3
14603	20.1	-85.4	ALL	SST	SUR	73	42	58	4.8	-0.7	4.9
17532	60.0	-132.8	ALL	SST	SUR	70	70	100			
17629	58.3	-157.6	ALL	SST	SUR	24	14	58	4.4	-5.0	6.7
17630	58.9	-128.0	ALL	SST	SUR	84	84	100			
21904	44.6	142.9	ALL	SST	SUR	31	31	100			
22901	37.6	129.1	ALL	SST	SUR	71	0	0	2.0	-3.9	4.4
32529	-10.8	58.2	ALL	SST	SUR	56	2	4	0.1	8.8	8.8
32629	-21.4	-136.4	ALL	SST	SUR	68	68	100			
32870	5.1	-100.3	ALL	SST	SUR	29	20	69	1.9	-2.5	3.1
32871	1.8	-98.5	ALL	SST	SUR	28	12	43	1.7	-2.4	2.9
32876	5.1	-102.4	ALL	SST	SUR	34	7	21	2.4	-4.2	4.8
32878	7.1	-121.0	ALL	SST	SUR	37	12	32	2.3	-4.2	4.8
32879	3.1	-103.0	ALL	SST	SUR	35	10	29	2.0	-2.9	3.6
32910	7.1	-120.8	ALL	SST	SUR	42	19	45	2.3	-4.2	4.8
32912	5.0	-120.9	ALL	SST	SUR	21	19	90	0.0	-2.9	2.9
32913	0.3	-119.4	ALL	SST	SUR	42	11	26	0.5	-1.6	1.6
32914	0.2	-119.7	ALL	SST	SUR	43	13	30	0.4	-1.6	1.6
32915	-1.5	-120.0	ALL	SST	SUR	36	10	28	0.7	-1.1	1.3
32919	-0.8	-120.2	ALL	SST	SUR	45	14	31	0.4	-1.1	1.2
33502	-22.9	-22.8	ALL	SST	SUR	107	0	0	0.3	3.3	3.3
33563	57.2	-123.1	ALL	SST	SUR	89	89	100			
34913	-23.0	-113.7	ALL	SST	SUR	58	0	0	1.2	8.1	8.2
41658	44.6	33.5	ALL	SST	SUR	75	75	100			
41660	44.6	33.5	ALL	SST	SUR	71	71	100			
44511	45.4	-39.4	ALL	SST	SUR	259	101	39	0.5	0.4	0.6
46903	34.4	-147.2	ALL	SST	SUR	395	0	0	1.1	5.1	5.2
46972	28.2	-122.9	ALL	SST	SUR	190	0	0	0.4	3.3	3.3
51523	-7.6	170.5	ALL	SST	SUR	52	52	100			
51566	56.4	-108.5	ALL	SST	SUR	30	30	100			
51611	-0.2	-112.9	ALL	SST	SUR	111	55	50	4.4	-3.3	5.5
53517	-9.3	52.7	ALL	SST	SUR	779	101	13	1.5	7.2	7.3
55912	-35.9	168.1	ALL	SST	SUR	496	0	0	1.8	4.0	4.4
62519	45.4	-14.4	ALL	SST	SUR	593	0	0	1.4	5.3	5.5

Figure 2. DRIFTER mean daily count. SEPTEMBER 2001

Main hours only

Global average number of observations in 24 hours = 9719

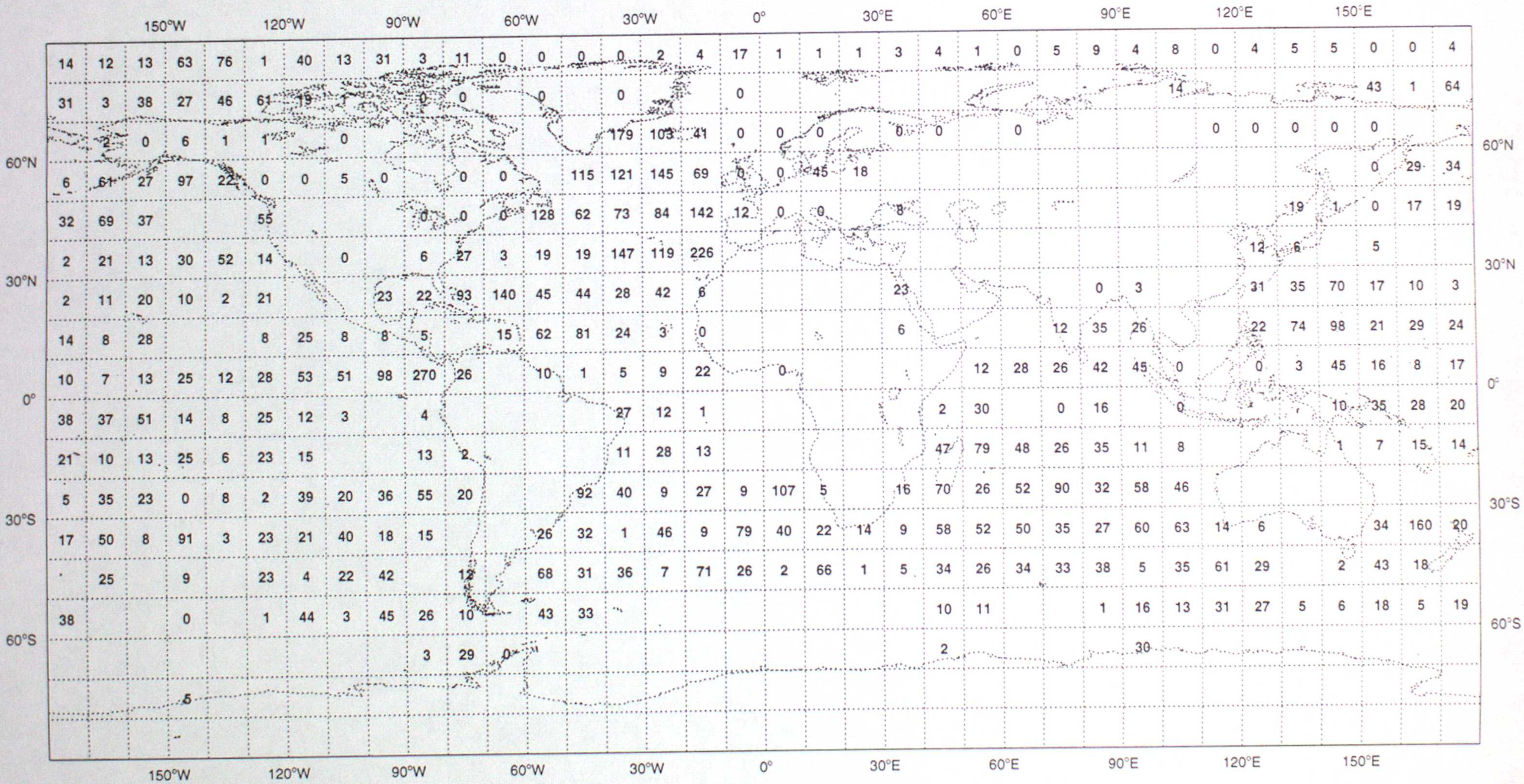

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
14 12 13 63 76 1 40 13 31 3 11 0 0 0 0 2 4 17 1 1 1 3 4 1 0 5 9 4 8 0 4 5 5 0 0 4
31 3 38 27 46 61 19 1 0 0 0 0 0 14 43 1 64
2 0 6 1 1 0 179 103 41 0 0 0 0 0 0 0 0 0 0 0
6 61 27 97 22 0 0 5 0 0 0 115 121 145 69 0 0 45 18 0 29 34
32 69 37 55 0 0 0 128 62 73 84 142 12 0 0 8 19 1 0 17 19
2 21 13 30 52 14 0 6 27 3 19 19 147 119 226 12 6 5
2 11 20 10 2 21 23 22 93 140 45 44 28 42 6 23 0 3 31 35 70 17 10 3
14 8 28 8 25 8 8 5 15 62 81 24 3 0 6 12 35 26 22 74 98 21 29 24
10 7 13 25 12 28 53 51 98 270 26 10 1 5 9 22 0 12 28 26 42 45 0 0 3 45 16 8 17
38 37 51 14 8 25 12 3 4 27 12 1 2 30 0 16 0 10 35 28 20
21 10 13 25 6 23 15 13 2 11 28 13 47 79 48 26 35 11 8 1 7 15 14
5 35 23 0 8 2 39 20 36 55 20 92 40 9 27 9 107 5 16 70 26 52 90 32 58 46
17 50 8 91 3 23 21 40 18 15 26 32 1 46 9 79 40 22 14 9 58 52 50 35 27 60 63 14 6 34 160 20
25 9 23 4 22 42 12 68 31 36 7 71 26 2 66 1 5 34 26 34 33 38 5 35 61 29 2 43 18
38 0 1 44 3 45 26 10 43 33 10 11 1 16 13 31 27 5 6 18 5 19
3 29 0 2 30
5

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: September 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60437	36.3N	2.8E	981	S8	85	0	0	0	0.9	-6.6	6.7
60476	35.4N	7.2E	1116	S8	87	42	48	0	0.6	14.2	14.2
61492	16.1N	13.5W	18	MS	62	0	0	5	1.6	5.6	5.8
63801	4.9S	29.6E	882	S8	30	0	0	0	0.7	8.3	8.3
67250	15.6S	32.8E	882	S8	52	52	100	0			
68030	18.5S	25.6E	1071	8	85	0	0	0	1.0	5.2	5.3
68396	26.5S	31.3E	641	S8	51	0	0	4	2.0	4.7	5.1
68530	29.1S	23.8E	994	S8	57	0	0	0	3.2	4.9	5.9
68575	30.0S	30.0E	1175	S8	115	115	100	0			

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
30554	54.5N	113.6E	995	MS	117	1	1	0	5.0	5.2	7.2
30967	49.9N	115.8E	623	MS	87	1	1	0	1.3	-5.8	5.9
40726	36.8N	45.7E	1384	MS	112	0	0	2	1.3	4.3	4.5
40741	36.6N	61.2E	235	MS	106	0	0	0	0.7	-4.3	4.4
41254	23.1N	57.7E	1755	S8	56	56	100	0			
41396	16.0N	48.9E	700	MS	52	0	0	0	0.6	6.6	6.6
41466	13.7N	44.1E	1402	8	47	1	2	0	0.7	-6.0	6.0
44416	28.6N	81.6E	720	MS	48	1	2	0	0.9	4.2	4.3
47022	40.8N	128.2E	1200	S	102	2	2	1	0.9	4.6	4.7
47127	36.9N	127.0E	16	MS	73	0	0	100	0.9	-11.0	11.0
51495	43.5N	91.6E	874	M	118	0	0	0	1.1	6.8	6.9
52602	38.8N	93.4E	2734	S	118	0	0	1	1.2	-6.1	6.2
52955	35.6N	100.8E	3201	S	118	0	0	0	0.8	12.7	12.7
54587	39.1N	123.2E	49	M	115	1	1	3	1.5	-4.5	4.7
56146	31.6N	100.0E	339	S	118	118	100	0			
56287	30.0N	103.0E	629	M	118	0	0	0	1.0	4.3	4.4
56385	29.5N	103.3E	3049	S	118	0	0	17	1.1	-4.0	4.1
56444	28.5N	98.9E	3488	S	118	0	0	0	0.5	13.6	13.6
56462	29.0N	101.5E	2994	S	118	0	0	0	0.9	9.1	9.1

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	MS	30	0	0	0	1.0	-5.6	5.7
82181	2.0S	54.1W	146	MS	81	1	1	1	1.0	5.6	5.7
83214	10.3S	54.9W	285	MS	84	0	0	48	4.8	-4.6	6.6
83235	12.4S	46.4W	604	MS	88	0	0	0	0.9	6.9	7.0
83332	14.1S	46.4W	826	MS	89	62	70	0	3.1	13.6	13.9
83361	15.6S	56.1W	151	MS	88	1	1	1	1.2	4.1	4.3
83408	14.3S	43.8W	447	MS	88	0	0	1	1.2	11.1	11.2
83488	17.8S	42.9W	1097	MS	87	87	100	0			
83531	18.6S	46.5W	940	MS	86	0	0	1	1.2	-6.6	6.7
83587	19.9S	43.9W	850	MS	86	0	0	1	1.2	-7.5	7.6
83773	23.1S	48.9W	793	MS	89	1	1	12	2.1	-10.3	10.5
83836	25.5S	50.6W	837	MS	89	0	0	1	1.5	-5.3	5.5
83953	30.9S	55.5W	231	MS	87	4	5	10	2.0	-10.8	11.0
84377	3.8S	73.3W	125	MS	107	1	1	2	1.5	4.6	4.8
84401	5.2S	80.6W	49	MS	110	0	0	1	1.6	6.2	6.4
84425	5.9S	76.1W	179	MS	21	0	0	0	1.1	4.8	4.9
84455	6.5S	76.4W	281	MS	81	0	0	0	1.3	8.0	8.1
84472	7.1S	78.5W	2620	S	52	0	0	0	0.9	-5.6	5.7
84474	7.2S	76.7W	350	S	21	0	0	0	1.2	10.9	11.0
84501	8.1S	79.0W	26	MS	83	0	0	0	0.8	4.2	4.3
84628	12.0S	77.1W	12	MS	108	1	1	1	0.7	4.1	4.2
84686	13.6S	72.0W	3248	S	109	0	0	0	1.0	-4.5	4.6
84688	13.7S	73.4W	3444	S	42	0	0	0	0.5	-13.2	13.2
84720	14.9S	75.0W	567	MS	53	1	2	0	0.9	5.0	5.1
84782	18.1S	70.3W	468	MS	91	0	0	0	1.1	9.3	9.4

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
85140	14.3S	67.4W	140	MS	55	0	0	0	1.3	5.3	5.5
85141	14.5S	67.6W	204	MS	57	0	0	0	1.2	5.0	5.1
85264	18.5S	64.1W	1998	S	54	54	100	0			
85312	19.8S	63.9W	992	S	42	0	0	0	1.2	7.4	7.5
85406	18.3S	70.3W	55	M	116	0	0	1	1.0	5.5	5.6
85418	20.5S	70.2W	48	M	116	0	0	1	1.1	4.0	4.1
85432	22.5S	68.9W	2320	S8	73	0	0	1	1.3	5.1	5.3
85836	43.6S	71.8W	277	M	46	0	0	0	1.8	4.3	4.7

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71023	65.9N	89.5W	18	MS	73	73	100	0			
71507	62.7N	98.3W	148	S	116	69	59	0	0.7	-1.0	1.2
71747	48.8N	91.6W	424	MS	118	0	0	0	0.7	4.4	4.5
72327	36.1N	86.7W	182	MS	115	0	0	0	0.7	4.5	4.6
72376	35.2N	111.8W	2192	M	110	0	0	0	1.5	4.3	4.6
76118	30.4N	109.7W	1040	MS	31	1	3	0	0.5	-10.1	10.1
76243	28.7N	100.5W	250	MS	84	0	0	2	1.8	4.0	4.4
76743	18.0N	92.9W	10	MS	76	0	0	0	0.9	6.1	6.2
76840	16.2N	93.9W	64	MS	49	0	0	0	1.1	4.7	4.8
76903	14.9N	92.3W	118	MS	92	0	0	0	0.8	6.8	6.8

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
92010	6.1S	145.4E	1587	M	51	1	2	0	0.6	9.3	9.3
92036	2.4S	147.4E	1	8	227	227	100	0			
94130	14.8S	131.9E	120	MS	103	0	0	0	0.9	5.5	5.6
95815	35.1S	144.0E	72	MS	119	0	0	44	3.2	4.2	5.3
96505	3.7N	115.7E	933	S8	22	21	95	0	0.0	0.2	0.2
97378	10.7S	123.1E	1	MS	47	44	94	0	1.2	-13.2	13.3

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
04416	72.6N	38.4W	3202	S	99	6	6	2	2.1	-5.1	5.5
06685	47.0N	9.1E	515	MS	118	0	0	1	1.0	6.2	6.3
10557	50.5N	11.1E	845	S8	357	357	100	0			
11265	46.6N	13.7E	2164	S8	108	31	29	61	5.1	2.7	5.8
12140	54.4N	18.7E	2	MS	115	0	0	1	1.0	7.6	7.7
13269	44.3N	19.9E	176	MS	116	1	1	1	0.9	7.6	7.7
14554	44.9N	18.4E	140	S	54	2	4	2	0.8	-13.7	13.7
14650	43.8N	18.0E	972	S	57	57	100	0			
15140	46.5N	22.4E	500	S8	22	22	100	0			
17092	39.8N	39.5E	1218	S8	118	1	1	1	1.3	6.8	6.9
17203	38.9N	40.5E	1177	S8	118	0	0	0	0.9	8.2	8.2
40184	31.9N	35.2E	757	S8	33	0	0	97	0.7	-5.7	5.7

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89004	71.7S	2.8W	815	MS	94	0	0	0	2.1	-6.6	6.9
89208	90.0S	0.0W	2835	M	40	11	28	0	0.9	1.8	2.0
89263	66.0S	66.1W	20	M	230	0	0	0	2.1	8.6	8.9
89264	71.4S	68.9W	780	S	250	0	0	0	1.7	7.7	7.9
89266	72.2S	60.3W	91	M	254	64	25	0	5.9	-6.6	8.9

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89272	74.8S	71.5W	1369	S	235	235	100	0			
89612	66.3S	110.8E	390	S	250	250	100	0			
89627	77.2S	123.5E	3084	S	283	192	68	0	1.8	-13.9	14.0
89637	69.9S	130.0E	2560	S	176	54	31	0	1.1	12.9	12.9
89744	74.0S	43.0E	3353	S	255	0	0	0	0.7	7.6	7.6
89769	78.5S	168.4E	50	S	372	372	100	0			
89847	67.6S	146.0E	30	S	298	0	0	0	1.8	-8.3	8.5

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: September 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	35	0	43	1.0	0.2	34	0	41	0	4.9	0.9
AAH	1686	0	41	1.5	0.7	1665	0	41	0	5.7	1.2
AAL	5714	0	25	1.3	0.3	5675	0	25	0	6.9	0.8
AAR	1646	1	7	1.5	-0.3	1612	0	8	0	7.6	0.5
ACA	3600	0	7	1.5	0.0	3593	0	8	0	7.6	0.7
ACI	44	0	55	1.6	-0.1	44	0	52	0	7.3	0.8
AEA	940	0	4	1.8	0.8	922	0	4	0	7.1	0.9
AEL	810	1	8	1.6	-0.1	800	0	8	0	7.9	1.0
AFL	628	1	3	2.0	0.7	627	0	4	0	8.2	1.0
AFR	1435	1	6	1.6	0.3	1449	0	7	0	7.4	1.1
AIH	372	1	5	1.6	0.1	373	0	6	0	6.7	1.3
AJM	263	0	5	2.5	1.1	263	0	6	0	8.0	0.6
ALM	99	2	8	1.8	0.7	99	1	8	0	8.4	1.0
AMM	153	1	3	2.1	0.9	151	0	5	0	8.6	1.2
AMT	818	0	41	2.1	1.2	812	0	42	0	6.1	0.8
AMX	367	2	4	1.6	0.5	362	0	5	0	9.3	1.3
ANA	954	0	10	1.5	0.8	948	0	10	0	6.6	0.9
ANZ	5552	0	34	1.4	0.3	5536	0	35	0	6.5	1.0
AVA	411	0	4	1.9	0.7	412	0	3	0	7.7	1.5
AVE	311	1	5	1.8	1.0	309	0	6	0	9.8	1.3
AVN	122	0	50	1.1	0.5	122	0	51	0	8.3	-0.7
AXF	45	0	27	1.6	0.5	45	0	27	0	7.2	2.6
AZA	761	1	4	2.1	0.4	773	0	4	0	7.1	1.3
BAL	256	0	9	1.3	-0.2	259	0	9	0	7.0	0.5
BAW	878	0	5	1.8	0.5	877	0	6	0	6.5	0.7
BBB	76	0	3	1.5	0.9	71	1	6	0	7.5	-0.2
BLX	45	0	0	1.3	0.1	44	2	5	0	6.9	1.1
BWA	303	1	100	2.2	1.5	297	0	6	0	8.0	1.3
CAL	374	1	3	1.5	0.3	380	0	6	0	8.5	1.1
CCA	280	1	13	2.3	0.1	308	0	100	0	11.3	0.4
CES	359	0	5	1.5	0.5	372	1	7	0	8.9	0.5
CFC	36	3	14	2.0	0.5	36	0	11	0	6.7	1.1
CFG	1110	1	2	1.4	-0.3	1099	0	3	0	7.0	0.9
CKS	56	2	16	1.6	0.8	66	2	12	0	7.5	1.9
CLX	434	0	4	1.6	0.0	439	0	4	0	6.5	0.2
CMI	173	0	2	1.7	0.7	170	0	4	0	8.2	1.4
CMM	772	0	7	1.4	-0.1	770	0	7	0	7.1	0.8
COA	1085	0	32	1.2	0.1	1075	0	33	0	7.8	1.2
CPA	29	0	3	1.4	0.5	29	0	7	0	14.8	1.0
CRL	498	0	6	1.8	0.8	484	0	7	0	7.2	1.0
CSN	115	2	10	2.0	0.8	119	0	12	0	11.7	0.8
CTB	98	8	22	3.5	1.8	97	0	5	0	7.4	1.5
CUB	217	1	7	2.3	0.9	220	0	5	0	8.5	1.2
DAL	3104	0	40	1.3	-0.1	3107	0	39	0	6.3	0.3
DLH	1643	0	7	1.5	0.2	1622	0	8	0	7.3	1.1
EDW	30	0	3	2.1	0.3	30	0	0	0	5.3	1.4
EEZ	39	3	10	1.5	0.9	40	0	8	0	8.1	2.2
EIA	317	0	41	1.6	-0.1	318	0	45	0	9.5	2.4
ELY	122	1	2	1.8	0.3	120	0	3	0	7.6	0.9
ETH	32	3	16	0.8	-0.5	32	0	16	0	8.6	2.5
EVA	714	0	5	1.5	0.0	732	0	5	0	7.0	0.8
EWW	119	0	1	1.3	0.1	129	0	2	0	7.5	1.1
FDX	1802	1	42	1.5	0.6	1817	0	42	0	7.9	0.7
FIN	228	0	2	1.6	0.4	215	0	2	0	6.1	0.6
FJI	768	0	47	1.3	0.5	746	0	47	0	6.7	0.5
FOM	583	1	32	1.1	-0.1	581	0	31	0	7.0	1.3
GAF	88	0	6	2.0	-0.4	88	0	9	0	9.3	0.1
GCO	76	0	1	1.5	0.5	79	0	100	0	13.6	3.1
GHA	95	1	2	1.5	-0.3	94	0	2	0	10.3	1.9

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
GHO	48	2	29	2.1	1.0	48	0	27	0	8.9	1.9
GRL	33	0	0	1.1	-0.1	33	0	3	0	9.4	-0.1
GTI	252	0	6	1.7	-0.2	265	0	6	0	8.7	-0.2
HAL	3676	0	37	1.3	0.2	3642	0	37	0	8.1	1.5
HVN	61	2	7	2.0	0.7	61	0	5	0	5.1	0.0
IBE	3256	1	6	1.8	0.8	3176	0	6	0	7.4	1.0
ICE	939	0	2	1.5	0.1	933	1	3	0	7.6	0.7
IFL	21	0	0	2.3	-1.0	21	5	10	0	7.8	1.2
IWD	226	1	1	1.2	-0.2	220	0	2	0	8.0	1.5
JAA	82	1	6	2.0	1.4	82	0	2	0	6.2	2.0
JAL	4317	0	5	1.6	0.4	4288	0	5	0	7.6	1.0
JAZ	1118	1	5	1.8	1.2	1099	0	4	0	7.2	1.0
JKK	561	0	6	1.6	0.3	511	0	8	0	7.6	1.2
JMC	117	2	7	1.0	-0.2	113	0	5	0	5.7	-0.1
KAI	25	0	48	2.6	1.0	26	0	42	0	4.7	-0.5
KAL	3157	0	7	1.6	0.2	3136	0	8	0	7.7	0.7
KLM	2077	0	8	1.6	0.2	2072	0	8	0	7.2	0.7
LAN	76	5	100	3.0	0.8	85	2	100	0	16.0	-0.6
LAP	62	8	48	3.3	2.4	63	0	43	0	11.1	1.4
LDA	53	2	4	1.9	0.7	57	0	2	0	5.8	0.8
LDI	541	4	15	2.7	0.3	534	0	6	0	8.0	0.8
LIB	779	1	8	1.8	0.9	777	0	7	0	6.5	1.3
LOT	169	0	2	1.7	-1.0	167	0	4	0	8.3	0.7
LTU	1018	1	5	1.3	-0.1	1005	0	5	0	6.8	0.6
LXR	52	2	4	1.5	0.7	52	0	4	0	7.0	1.5
MAS	407	2	8	1.7	0.4	410	0	6	0	7.2	0.2
MAU	25	0	16	2.9	-0.8	25	0	8	0	8.5	-0.3
MON	102	0	4	1.2	0.3	102	0	5	0	6.5	0.9
MPD	516	1	3	1.6	0.3	509	0	3	0	7.6	1.1
MPH	585	0	4	1.7	-0.5	589	0	4	0	7.4	0.4
NCA	669	0	3	1.8	0.4	655	1	4	0	8.4	0.0
NWA	9158	0	8	1.5	0.6	9117	0	9	0	7.7	0.7
NZL	2926	0	11	1.2	0.1	2926	0	11	0	5.0	0.8
OAE	260	0	33	2.0	0.6	262	0	40	0	10.2	2.6
PAC	410	0	30	1.7	-0.4	411	0	29	0	7.5	1.0
PAL	1177	0	5	1.3	0.3	1122	0	6	0	8.0	0.9
PAO	388	0	59	1.5	0.1	385	2	59	0	7.1	1.4
PIC	20	0	0	0.9	0.0	20	0	0	0	7.9	-1.3
PUA	31	0	39	3.7	0.7	30	0	43	0	16.3	4.8
QFA	4225	0	62	1.4	0.3	4226	0	62	0	6.5	0.7
RAF	21	0	5	1.8	0.7	21	0	10	0	11.1	3.8
RAM	61	0	8	1.5	-0.6	61	0	10	0	11.3	2.3
RCH	456	2	100	2.7	-0.2	454	1	100	0	10.5	1.4
RJA	24	0	8	1.9	0.4	24	0	8	0	12.3	2.0
RKA	40	0	3	1.7	-0.6	39	0	0	0	6.3	-0.7
RON	21	0	38	1.3	0.3	23	0	39	0	4.9	0.6
RRR	102	0	8	1.8	0.6	104	0	12	0	7.3	1.8
RYN	232	0	41	1.7	0.9	231	0	41	0	4.6	0.5
RZO	429	2	4	1.5	-0.2	428	0	3	0	8.2	0.5
SAA	396	0	8	1.6	0.2	394	0	7	0	7.0	1.0
SIA	425	0	2	1.4	0.4	429	0	2	0	6.5	0.5
SLR	113	2	10	1.4	0.8	114	0	10	0	7.0	0.0
SQC	61	0	3	1.1	0.7	59	0	5	0	5.9	1.4
SSV	51	0	6	1.5	-0.2	51	0	10	0	10.0	0.7
SVA	39	0	5	1.2	0.2	41	0	7	0	11.0	-0.4
SWR	29	0	7	2.0	-0.3	30	0	17	0	12.9	2.2
TAM	85	1	21	2.4	0.8	86	3	100	0	12.3	1.3
TAP	841	1	3	1.3	0.0	831	0	3	0	7.1	0.9
THA	219	0	5	1.3	-0.2	214	0	11	0	10.8	0.6

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
THT	93	0	25	1.6	0.8	93	0	26	0	9.3	1.4
TPA	28	0	4	1.1	0.6	28	0	7	0	6.9	0.0
TSC	388	1	9	2.6	0.8	400	0	5	0	7.6	1.1
TWA	827	1	34	1.5	0.6	822	0	33	0	6.1	1.4
UAL	124596	0	100	1.1	0.0	124406	0	100	0	4.7	0.4
UPS	1503	0	48	1.5	0.5	1521	0	48	0	6.6	0.7
USA	191	0	2	1.3	0.3	170	0	2	0	6.0	1.4
VIR	374	1	3	1.6	-0.1	372	0	2	0	7.3	1.2
VPB	25	0	8	1.9	1.2	25	0	12	0	12.6	-0.3
VRG	202	0	17	2.2	1.0	204	1	100	0	13.4	3.6
VVR	132	2	32	2.5	1.1	137	0	32	0	7.2	0.8
WOA	248	2	8	1.5	0.7	267	1	9	0	8.3	1.2
YSS	166	1	3	1.6	1.3	165	0	4	0	8.0	1.1
AU	47480	0	13	1.2	0.6	47476	0	13	0	5.1	0.7
EU	114431	0	33	1.3	0.4	114431	0	32	0	4.7	0.5
KL	4311	0	42	1.3	0.9	4294	0	7	0	5.0	0.8
LH	3133	0	8	1.6	1.2	3123	0	8	0	5.1	0.9
MK	5850	0	43	1.9	1.6	5792	0	6	0	6.5	1.2
SA	5743	0	48	2.2	1.5	5732	0	9	0	7.2	0.7
SV	1423	5	100	2.9	2.6	1392	4	8	0	7.5	1.0
TN	61	0	8	2.2	1.3	64	0	19	0	11.1	-1.4
WA	306	2	12	1.7	0.5	300	5	84	0	7.8	0.6
XX	3784	1	8	1.4	0.4	3761	0	10	0	8.9	1.5
N	552	1	14	2.0	0.8	585	0	14	0	7.7	1.3
US ACARS	743280	1	57	1.3	0.5	743271	0	56	0	5.1	0.7

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: September 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :1000.0 – 300.1 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

NB : All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	165	1	12	1.3	0.3	163	0	12	0	7.7	0.6
AFR	63	5	10	1.1	0.3	64	0	6	0	9.2	0.9
ANZ	123	9	25	0.9	0.1	124	0	22	0	6.6	1.2
AXF	40	0	33	1.0	0.2	39	0	38	0	6.2	1.0
BAF	74	1	5	2.0	0.4	74	1	7	0	12.2	0.3
CFC	71	3	10	1.2	0.6	79	0	13	0	6.7	1.3
CFG	28	4	7	1.6	0.0	27	0	7	0	5.4	0.1
CLX	20	0	0	1.2	-0.2	20	0	5	0	6.5	0.7
CMI	44	0	20	3.5	-1.4	43	0	7	0	10.8	3.1
COA	50	4	34	1.1	0.7	51	0	31	0	8.1	1.1
DAF	22	0	9	3.1	2.1	22	0	0	0	6.2	-0.2
DAL	157	1	52	1.1	0.2	159	0	52	0	6.5	0.0
DHL	69	0	54	6.2	-6.1	74	0	14	0	11.7	2.3
DLH	142	1	17	1.2	0.3	143	0	15	0	7.6	1.8
EVA	66	3	35	2.0	0.3	67	0	33	0	7.6	0.8
EWW	40	3	5	1.6	0.8	45	0	2	0	7.1	0.5
FDX	399	1	27	1.4	0.7	417	0	27	0	9.0	1.2
FIN	24	0	0	1.1	0.7	25	0	8	0	12.1	0.1
FXI	29	0	0	1.9	1.0	29	0	10	0	12.8	0.5
GAF	29	0	0	0.8	0.6	29	0	3	0	9.5	0.3
GCO	203	0	2	1.4	0.6	208	0	100	0	13.4	3.6
GHA	27	0	15	2.3	0.1	27	0	15	0	14.4	1.6
GTI	20	0	10	0.8	-0.1	20	0	15	0	8.8	1.2
HAL	101	2	43	2.3	-0.2	98	0	42	0	8.6	1.7
IBE	85	2	19	2.1	0.4	83	0	12	0	5.9	1.6
ICE	40	0	5	0.9	0.1	40	0	5	0	8.4	1.6
JAL	81	1	5	1.8	0.3	81	0	4	0	8.3	1.5
JAZ	65	2	8	2.1	1.4	67	0	7	0	9.3	0.3
KAL	43	2	16	1.3	0.2	45	0	13	0	6.8	-1.0
KIW	80	9	50	2.7	0.9	77	0	40	0	6.4	-0.2
KLM	73	0	4	1.6	0.8	74	0	7	0	7.8	0.6
LAN	117	3	100	2.7	-0.3	126	0	100	0	11.6	3.5
LIB	43	2	2	1.6	1.3	46	0	2	0	4.8	1.1
LTU	33	0	3	1.1	0.0	31	0	3	0	5.6	1.4
MAS	28	0	29	1.5	0.0	28	0	32	0	6.8	1.4
MPH	46	2	7	1.1	0.2	46	0	7	0	9.3	-0.6
NCA	95	0	1	1.6	0.7	92	0	1	0	6.1	1.0
NWA	210	3	14	1.5	0.3	210	0	13	0	7.9	-1.1
NZL	17476	0	55	1.4	0.4	17476	0	55	0	4.7	0.5
PAL	44	2	16	0.9	-0.5	36	0	19	0	8.5	2.2
QFA	171	5	48	1.2	0.4	171	1	48	0	9.7	2.5
RCH	176	2	99	3.9	-1.7	180	1	99	0	12.5	2.0
RRR	64	0	8	3.6	2.6	64	0	6	0	7.8	0.5
SAA	57	0	2	1.8	-0.8	58	0	0	0	4.8	0.2
SIA	54	0	6	1.5	0.5	54	0	6	0	6.0	1.5
SWR	32	0	9	1.1	-0.3	34	0	9	0	12.7	5.1
THA	20	0	0	0.7	0.4	20	0	20	0	10.3	0.7
UAL	195777	0	100	1.2	0.0	195401	0	100	0	4.0	0.3
UPS	117	0	28	1.5	0.5	117	0	29	0	6.9	0.3
VHJ	40	3	3	2.8	1.5	40	0	0	0	8.1	-0.7
VTA	32	0	3	2.1	-1.3	39	0	5	0	6.6	1.2
VVP	76	4	45	4.0	0.4	75	0	37	0	9.2	2.5
VVR	27	0	15	2.9	-2.5	31	0	13	0	4.5	1.0
WOA	21	0	5	2.5	1.6	23	0	9	0	9.6	0.5
AU	52008	0	61	1.2	0.3	52008	0	61	0	4.1	0.4

		TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
EU	558409	0	70	1.0	0.2	558001	0	70	0	3.8	0.1
KL	3993	0	71	1.5	0.7	3972	0	54	0	3.6	0.5
LH	1082	0	63	1.2	0.4	1067	0	63	0	4.1	0.8
MK	4032	0	72	1.5	0.7	4015	0	53	0	4.4	0.7
SA	2628	0	68	1.6	0.7	2629	0	56	0	5.2	0.3
SV	4830	41	100	4.3	1.3	4766	62	84	0	7.7	2.8
XX	450	6	10	1.7	0.1	450	0	13	0	12.2	2.5
US ACARS	1020361	0	72	1.3	0.3	1017991	0	72	0	4.1	0.3

Figure 3a. AIRCRAFT 300 - 150 hPa mean daily count. SEPTEMBER 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 38332

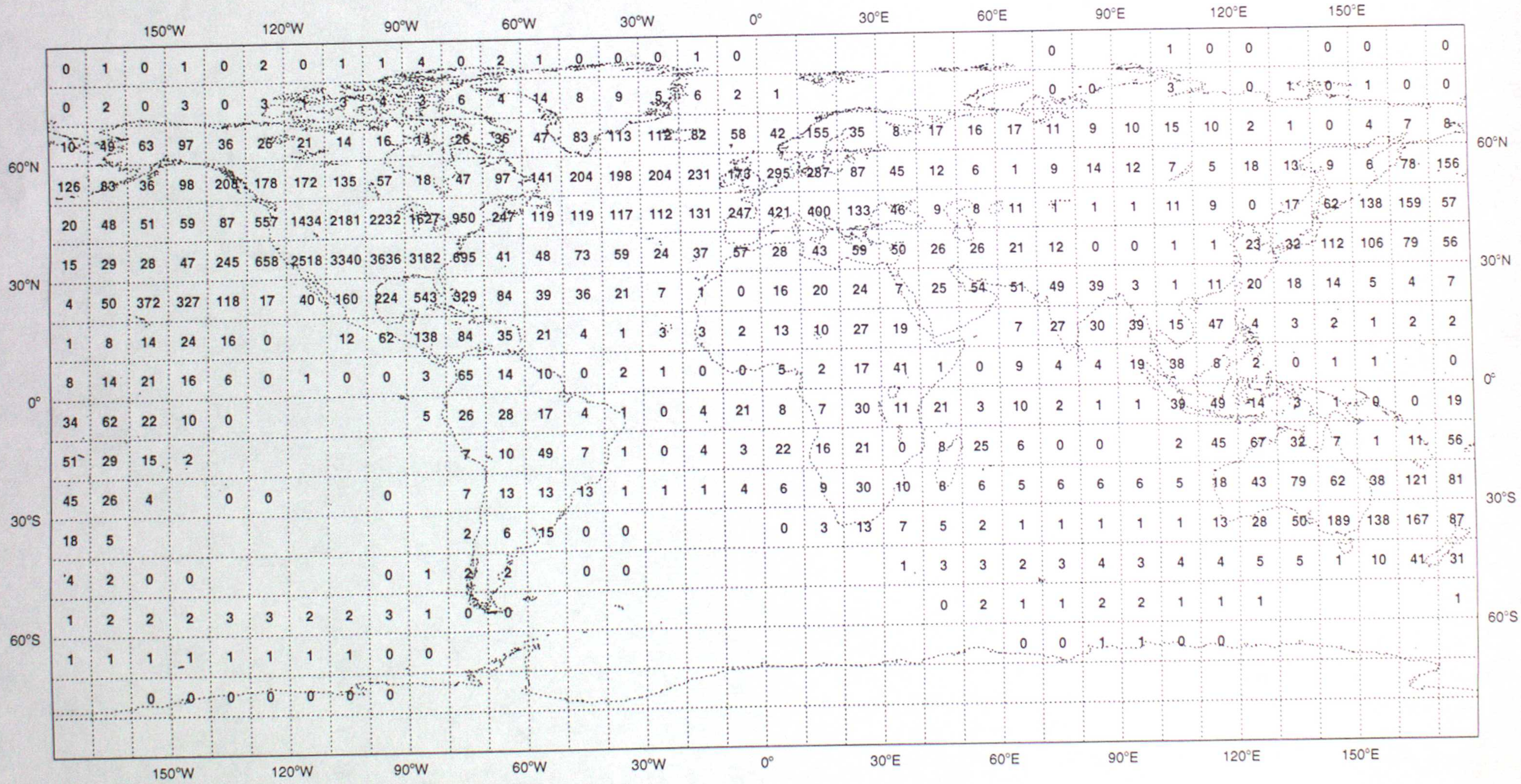

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0 1 0 1 0 2 0 1 1 4 0 2 1 0 0 0 1 0 0 1 0 0 0 0 0
0 2 0 3 0 3 1 3 4 3 6 4 14 8 9 5 6 2 1 0 0 3 0 1 0 1 0 0
10 49 63 97 36 26 21 14 16 14 26 36 47 83 113 112 82 58 42 155 35 8 17 16 17 11 9 10 15 10 2 1 0 4 7 8
126 83 36 98 208 178 172 135 57 18 47 97 141 204 198 204 231 173 295 287 87 45 12 6 1 9 14 12 7 5 18 13 9 6 78 156
20 48 51 59 87 557 1434 2181 2232 1627 950 247 119 119 117 112 131 247 421 400 133 46 9 8 11 1 1 1 11 9 0 17 62 138 159 57
15 29 28 47 245 658 2518 3340 3636 3182 695 41 48 73 59 24 37 57 28 43 59 50 26 26 21 12 0 0 1 1 23 32 112 106 79 56
4 50 372 327 118 17 40 160 224 543 329 84 39 36 21 7 1 0 16 20 24 7 25 54 51 49 39 3 1 11 20 18 14 5 4 7
1 8 14 24 16 0 12 62 138 84 35 21 4 1 3 3 2 13 10 27 19 7 27 30 39 15 47 4 3 2 1 2 2
8 14 21 16 6 0 1 0 0 3 65 14 10 0 2 1 0 0 5 2 17 41 1 0 9 4 4 19 38 8 2 0 1 1 0
34 62 22 10 0 5 26 28 17 4 1 0 4 21 8 7 30 11 21 3 10 2 1 1 39 49 14 3 1 0 0 19
51 29 15 2 7 10 49 7 1 0 4 3 22 16 21 0 8 25 6 0 0 2 45 67 32 7 1 11 56
45 26 4 0 0 0 7 13 13 13 1 1 1 4 6 9 30 10 8 6 5 6 6 6 5 18 43 79 62 38 121 81
18 5 2 6 15 0 0 0 3 13 7 5 2 1 1 1 1 1 13 28 50 189 138 167 87
4 2 0 0 0 1 2 2 0 0 1 3 3 2 3 4 3 4 4 5 5 1 10 41 31
1 2 2 2 3 3 2 2 3 1 0 0 0 2 1 1 2 2 1 1 1 1
1 1 1 1 1 1 1 1 0 0 0 0 1 1 0 0
0 0 0 0 0 0 0

Figure 3b. AIRCRAFT 1000 - 301 hPa mean daily count. SEPTEMBER 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 61981

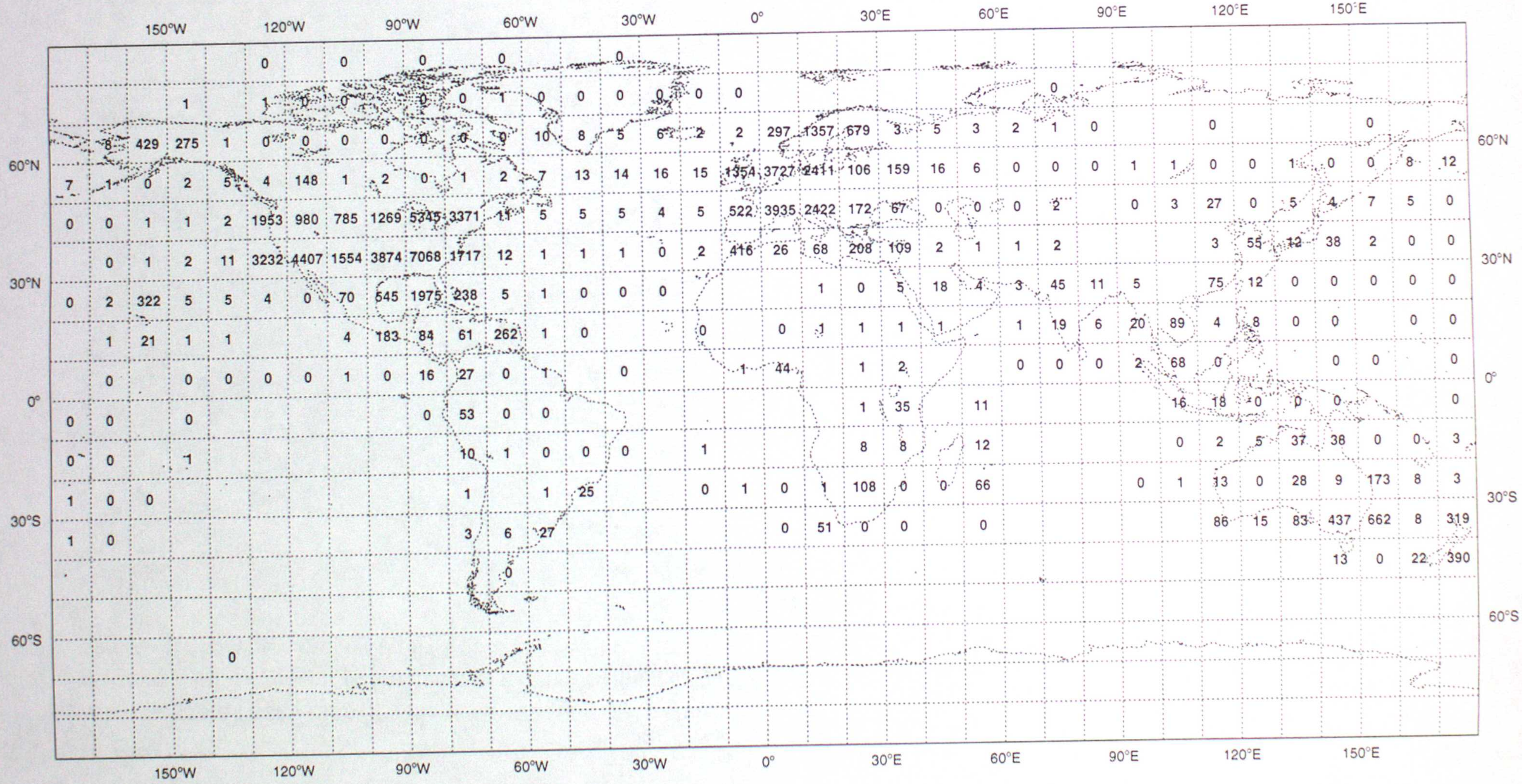

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
0 0 0 0 0
1 1 0 0 0 0 1 0 0 0 0 0 0 0 0
8 429 275 1 0 0 0 0 0 0 0 10 8 5 6 2 2 297 1357 679 3 5 3 2 1 0 0 0
7 1 0 2 5 4 148 1 2 0 1 2 7 13 14 16 15 1354 3727 2411 106 159 16 6 0 0 0 1 1 0 0 1 0 0 8 12
0 0 1 1 2 1953 980 785 1269 5345 3371 11 5 5 5 4 5 522 3935 2422 172 67 0 0 0 2 0 3 27 0 5 4 7 5 0
0 1 2 11 3232 4407 1554 3874 7068 1717 12 1 1 1 0 2 416 26 68 208 109 2 1 1 2 3 55 12 38 2 0 0
0 2 322 5 5 4 0 70 545 1975 238 5 1 0 0 0 1 0 5 18 4 3 45 11 5 75 12 0 0 0 0 0
1 21 1 1 4 183 84 61 262 1 0 0 0 1 1 1 1 1 19 6 20 89 4 8 0 0 0 0
0 0 0 0 0 1 0 16 27 0 1 0 1 44 1 2 0 0 0 2 68 0 0 0 0
0 0 0 0 53 0 0 1 35 11 16 18 0 0 0 0
0 0 1 10 1 0 0 0 1 8 8 12 0 2 5 37 38 0 0 3
1 0 0 1 1 25 0 1 0 1 108 0 0 66 0 1 13 0 28 9 173 8 3
1 0 3 6 27 0 51 0 0 0 86 15 83 437 662 8 319
0 13 0 22 390
0

Figure 4a. AIRCRAFT 300 - 150 hPa mean winds. SEPTEMBER 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

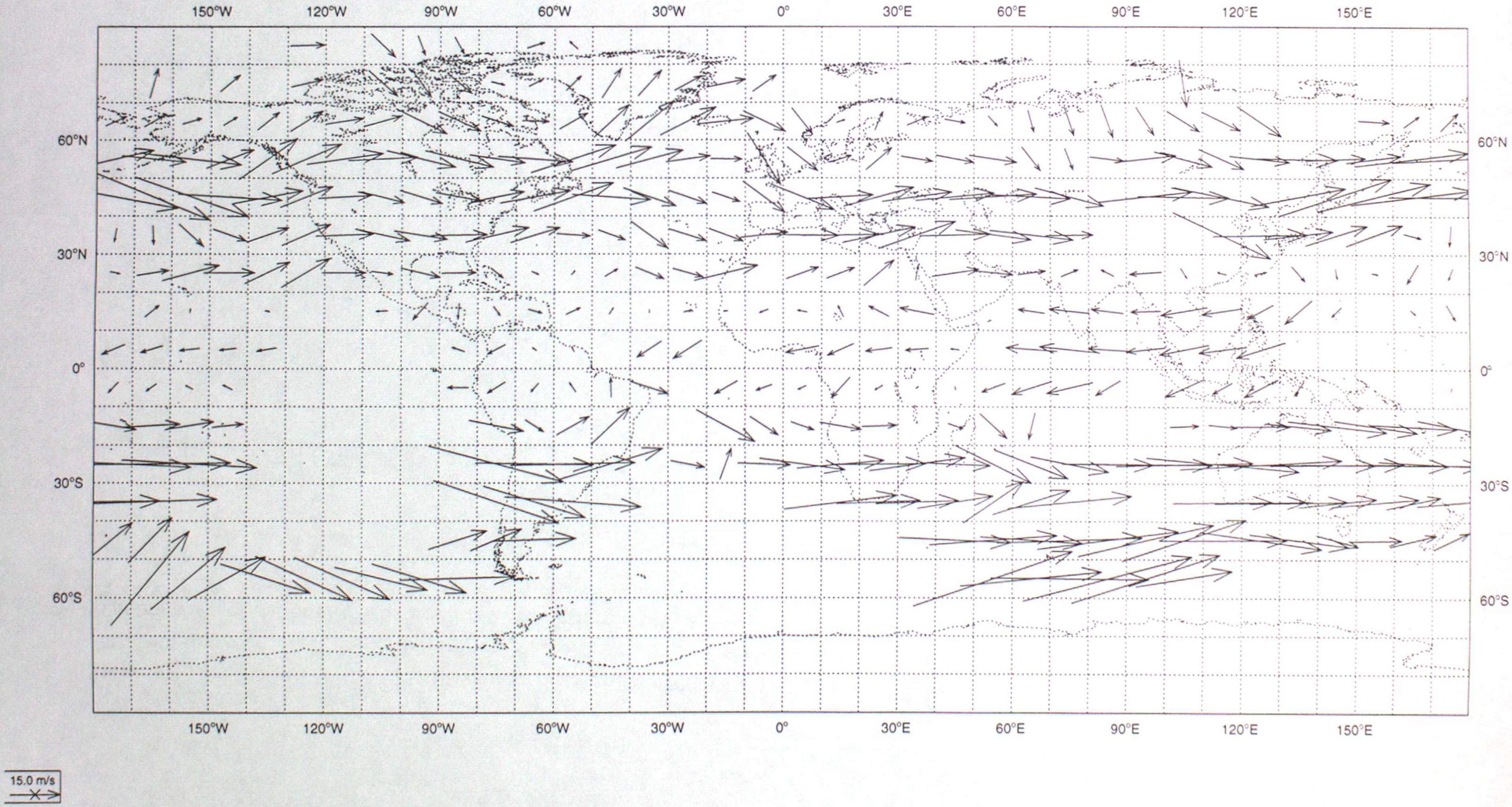

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 4b. AIRCRAFT 1000 - 301 hPa mean winds. SEPTEMBER 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

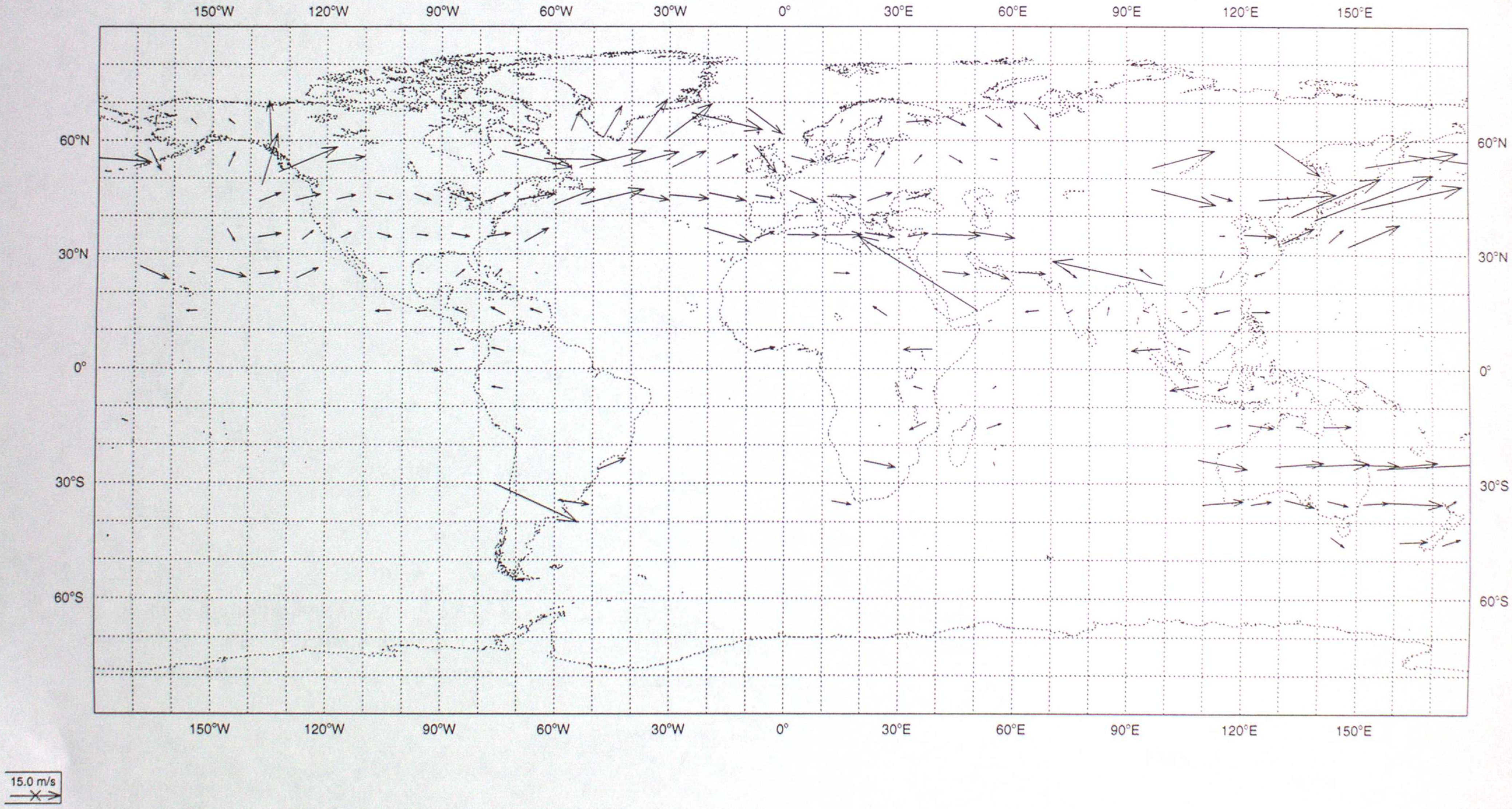

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 5a. AIRCRAFT 300 - 150 hPa mean O-B winds. SEPTEMBER 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

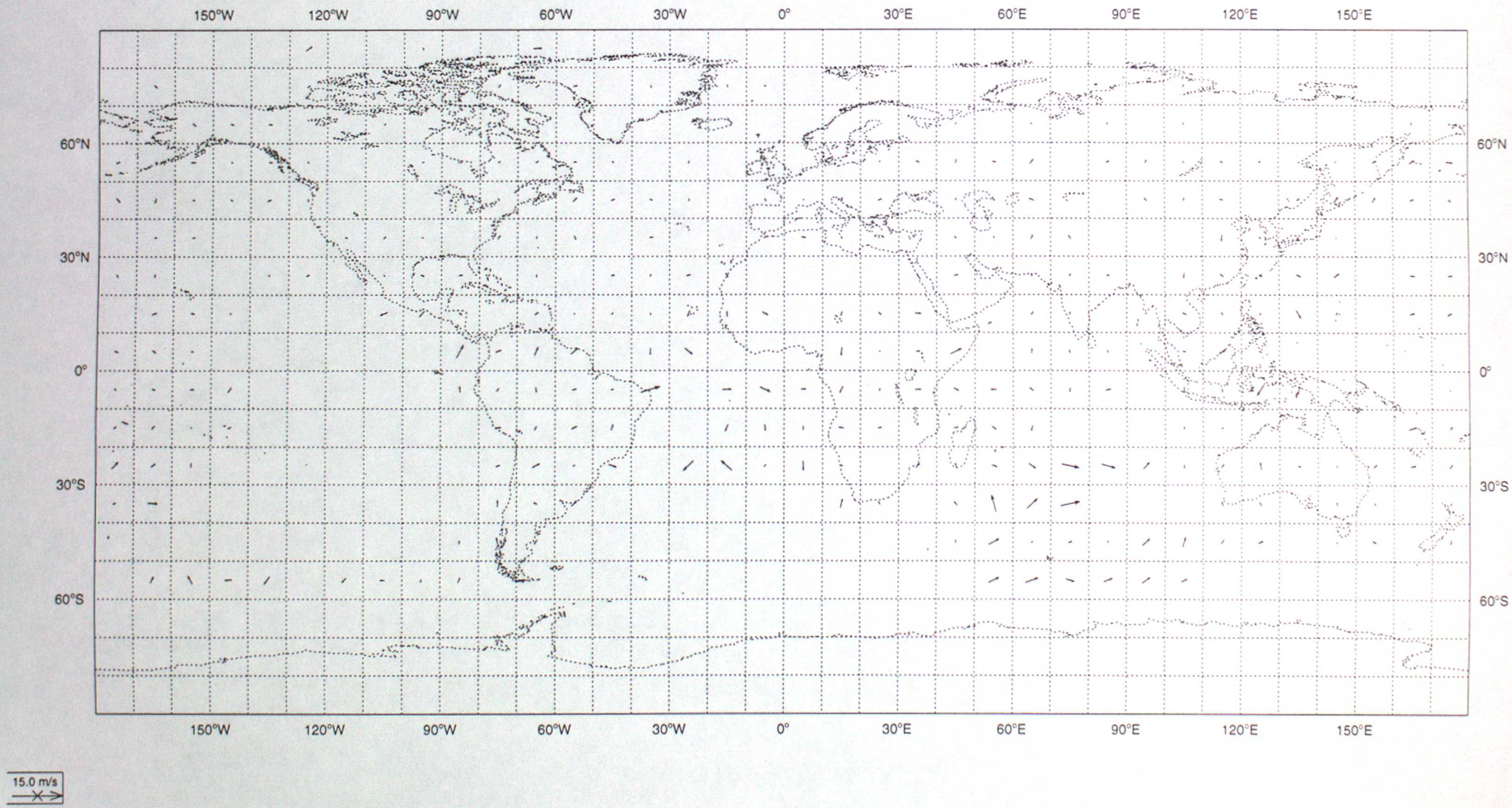

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 5b. AIRCRAFT 1000 - 301 hPa mean O-B winds. SEPTEMBER 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

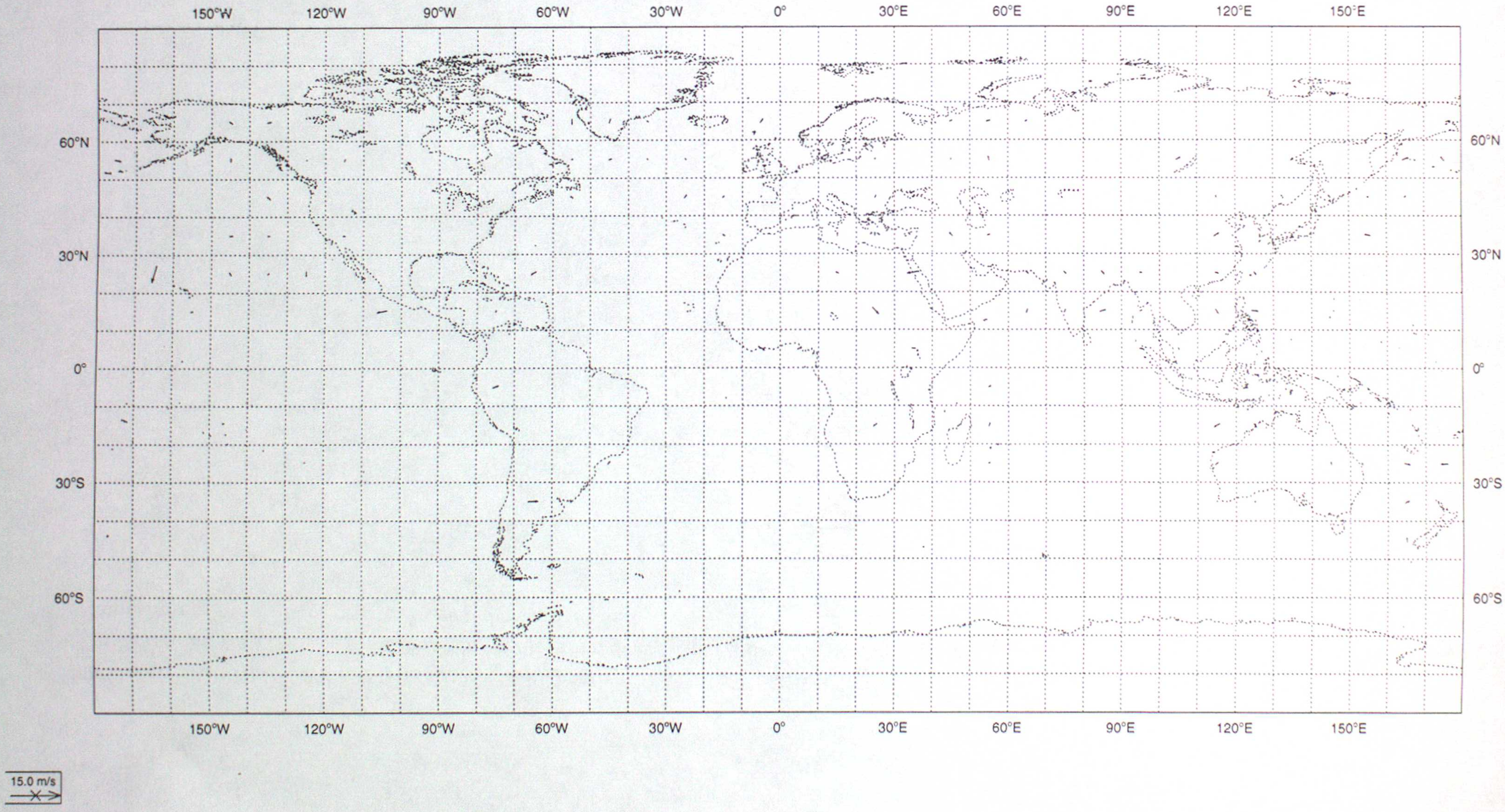

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 6a. AIRCRAFT 300 - 150 hPa mean O-B speeds (ms-1). SEPTEMBER 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

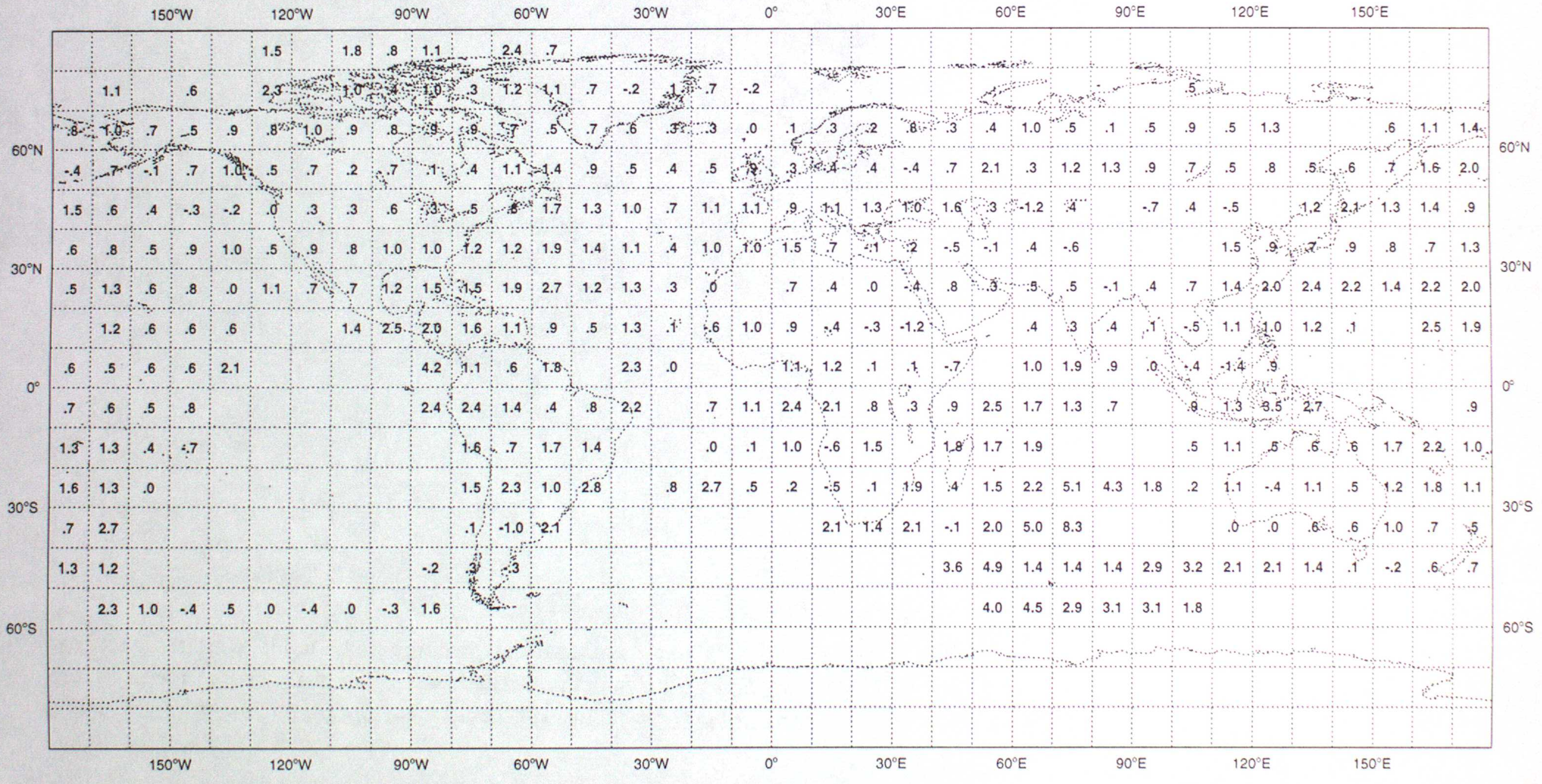

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
1.5 1.8 .8 1.1 2.4 .7
1.1 .6 2.3 1.0 .4 1.0 .3 1.2 1.1 .7 -.2 .1 .7 -.2 .5
.8 1.0 .7 .5 .9 .8 1.0 .9 .8 .9 .9 .7 .5 .7 .6 .3 .3 .0 .1 .3 .2 .8 .3 .4 1.0 .5 .1 .5 .9 .5 1.3 .6 1.1 1.4
-.4 .7 -.1 .7 1.0 .5 .7 .2 .7 .1 .4 1.1 1.4 .9 .5 .4 .5 .9 .3 .4 .4 -.4 .7 2.1 .3 1.2 1.3 .9 .7 .5 .8 .5 .6 .7 1.6 2.0
1.5 .6 .4 -.3 -.2 .0 .3 .3 .6 .3 .5 .8 1.7 1.3 1.0 .7 1.1 1.1 .9 1.1 1.3 1.0 1.6 .3 -1.2 .4 -.7 .4 -.5 1.2 2.1 1.3 1.4 .9
.6 .8 .5 .9 1.0 .5 .9 .8 1.0 1.0 1.2 1.2 1.9 1.4 1.1 .4 1.0 1.0 1.5 .7 -.1 .2 -.5 -.1 .4 -.6 1.5 .9 .7 .9 .8 .7 1.3
.5 1.3 .6 .8 .0 1.1 .7 .7 1.2 1.5 1.5 1.9 2.7 1.2 1.3 .3 .0 .7 .4 .0 -.4 .8 .3 .5 .5 -.1 .4 .7 1.4 2.0 2.4 2.2 1.4 2.2 2.0
1.2 .6 .6 .6 1.4 2.5 2.0 1.6 1.1 .9 .5 1.3 .1 -.6 1.0 .9 -.4 -.3 -1.2 .4 .3 .4 .1 -.5 1.1 1.0 1.2 .1 2.5 1.9
.6 .5 .6 .6 2.1 4.2 1.1 .6 1.8 2.3 .0 1.1 1.2 .1 .1 -.7 1.0 1.9 .9 .0 -.4 -1.4 .9
.7 .6 .5 .8 2.4 2.4 1.4 .4 .8 2.2 .7 1.1 2.4 2.1 .8 .3 .9 2.5 1.7 1.3 .7 .9 1.3 3.5 2.7 .9
1.3 1.3 .4 -.7 1.6 .7 1.7 1.4 .0 .1 1.0 -.6 1.5 1.8 1.7 1.9 .5 1.1 .5 .6 .6 1.7 2.2 1.0
1.6 1.3 .0 1.5 2.3 1.0 2.8 .8 2.7 .5 .2 -.5 .1 1.9 .4 1.5 2.2 5.1 4.3 1.8 .2 1.1 -.4 1.1 .5 1.2 1.8 1.1
.7 2.7 .1 -1.0 2.1 2.1 1.4 2.1 -.1 2.0 5.0 8.3 .0 .0 .6 .6 1.0 .7 .5
1.3 1.2 -.2 .3 -.3 3.6 4.9 1.4 1.4 1.4 2.9 3.2 2.1 2.1 1.4 .1 -.2 .6 .7
2.3 1.0 -.4 .5 .0 -.4 .0 -.3 1.6 4.0 4.5 2.9 3.1 3.1 1.8

Figure 6b. AIRCRAFT 1000 - 301 hPa mean O-B speeds (ms-1). SEPTEMBER 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

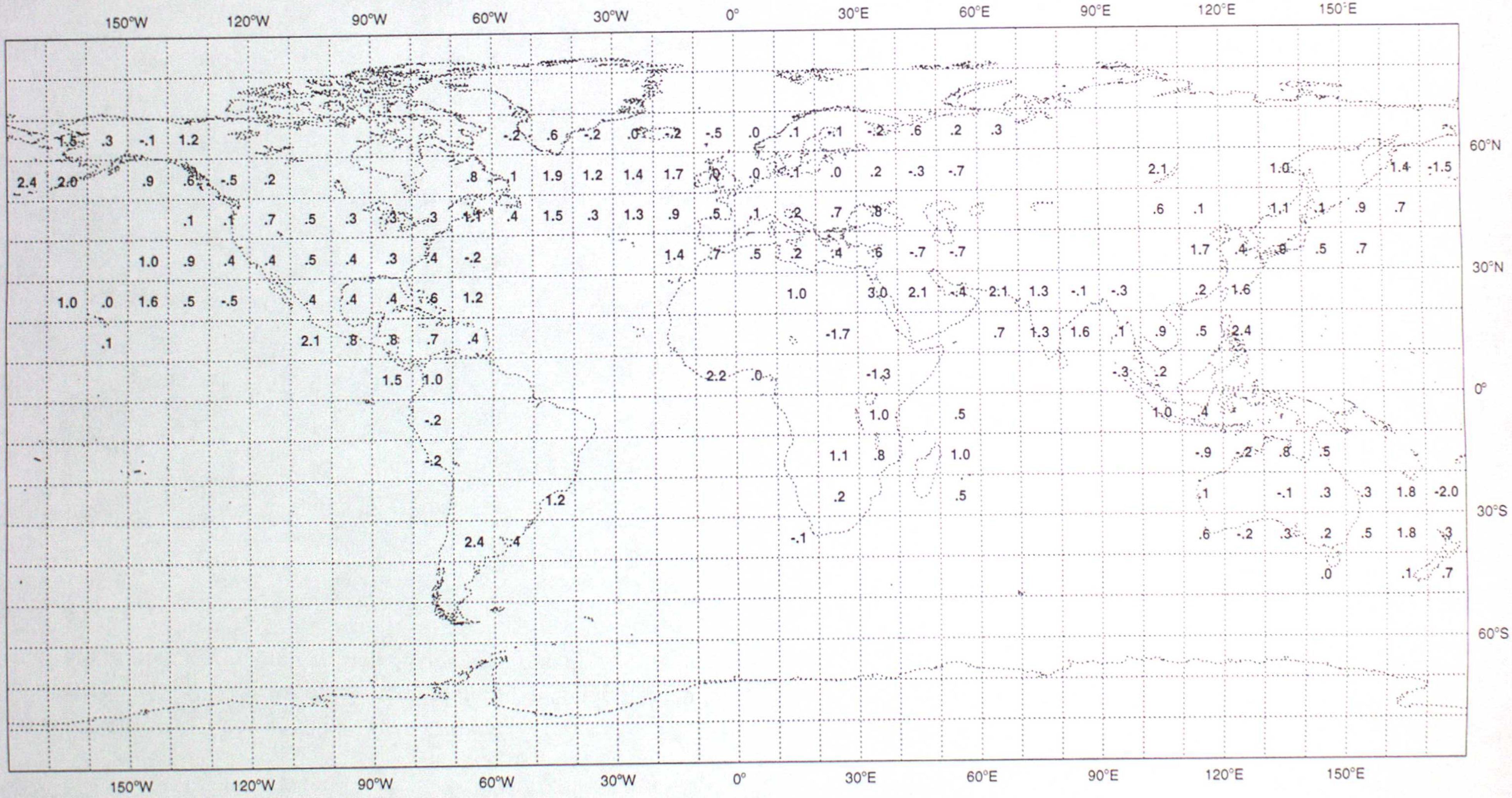

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
1.5 .3 -.1 1.2 -.2 .6 -.2 .0 -.2 -.5 .0 .1 -.1 -.2 .6 .2 .3
2.4 2.0 .9 .6 -.5 .2 .8 .1 1.9 1.2 1.4 1.7 .0 .0 .1 .0 .2 -.3 -.7 2.1 1.0 1.4 -1.5
.1 .1 .7 .5 .3 .3 .3 1.1 .4 1.5 .3 1.3 .9 .5 .1 .2 .7 .8 .6 .1 1.1 .1 .9 .7
1.0 .9 .4 .4 .5 .4 .3 .4 -.2 1.4 .7 .5 .2 .4 .6 -.7 -.7 1.7 .4 .8 .5 .7
1.0 .0 1.6 .5 -.5 .4 .4 .4 .6 1.2 1.0 3.0 2.1 .4 2.1 1.3 -.1 -.3 .2 1.6
.1 2.1 .8 .8 .7 .4 -1.7 .7 1.3 1.6 .1 .9 .5 2.4
1.5 1.0 2.2 .0 -1.3 -.3 .2
-.2 1.0 .5 1.0 .4
-.2 1.1 .8 1.0 -.9 -.2 .8 .5
1.2 .2 .5 .1 -.1 .3 .3 1.8 -2.0
2.4 .4 -.1 .6 -.2 .3 .2 .5 1.8 .3
.0 .1 .7

Figure 7a. AIRCRAFT 300 - 150 hPa RMS O-B vector (ms-1). SEPTEMBER 2001

Observations with O-B vector difference greater than 60 ms-1 excluded

Values are printed where greater than 30 obs are present

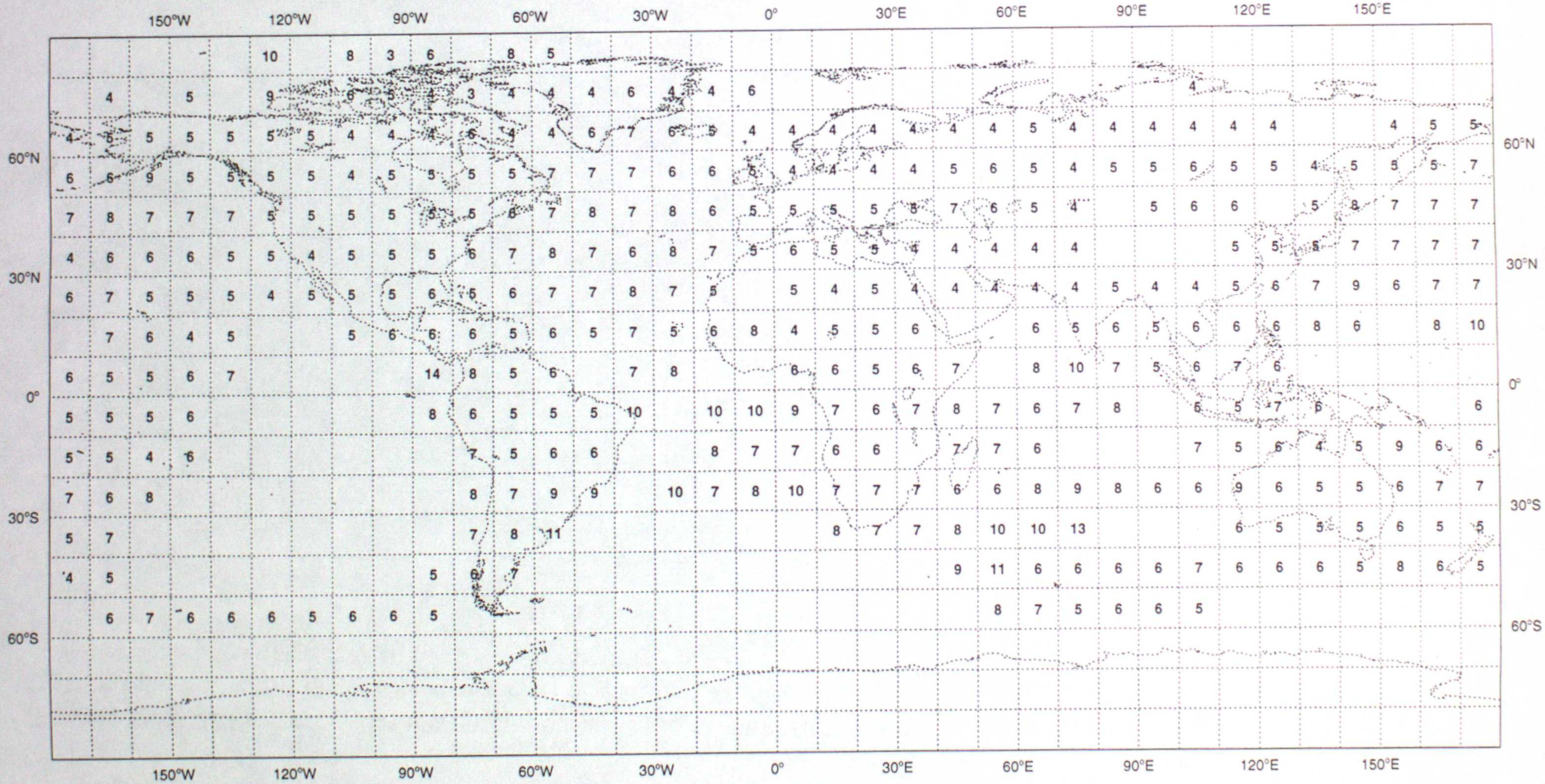

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
- 10 8 3 6 8 5
4 5 9 6 5 4 3 4 4 4 6 4 4 6 4
4 6 5 5 5 5 5 4 4 4 6 4 4 6 7 6 5 4 4 4 4 4 4 5 4 4 4 4 4 4 5 5
6 6 9 5 5 5 5 4 5 5 5 5 7 7 7 6 6 5 4 4 4 4 5 6 5 4 5 5 6 5 5 4 5 5 5 7
7 8 7 7 7 5 5 5 5 5 5 6 7 8 7 8 6 5 5 5 5 8 7 6 5 4 5 6 6 5 8 7 7 7
4 6 6 6 5 5 4 5 5 5 6 7 8 7 6 8 7 5 6 5 5 4 4 4 4 4 5 5 5 7 7 7 7
6 7 5 5 5 4 5 5 5 6 5 6 7 7 8 7 5 5 4 5 4 4 4 4 4 5 4 4 5 6 7 9 6 7 7
7 6 4 5 5 6 6 6 5 6 5 7 5 6 8 4 5 5 6 6 5 6 5 6 6 6 8 6 8 10
6 5 5 6 7 14 8 5 6 7 8 6 6 5 6 7 8 10 7 5 6 7 6
5 5 5 6 8 6 5 5 5 10 10 10 9 7 6 7 8 7 6 7 8 5 5 7 6 6
5 5 4 6 7 5 6 6 8 7 7 6 6 7 7 6 7 5 6 4 5 9 6 6
7 6 8 8 7 9 9 10 7 8 10 7 7 7 6 6 8 9 8 6 6 9 6 5 5 6 7 7
5 7 7 8 11 8 7 7 8 10 10 13 6 5 5 5 6 5 5
4 5 5 6 7 9 11 6 6 6 6 7 6 6 6 5 8 6 5
6 7 6 6 6 5 6 6 5 8 7 5 6 6 5

Figure 7b. AIRCRAFT 1000 - 301 hPa RMS O-B vector (ms-1). SEPTEMBER 2001

Observations with O-B vector difference greater than 60 ms-1 excluded

Values are printed where greater than 30 obs are present

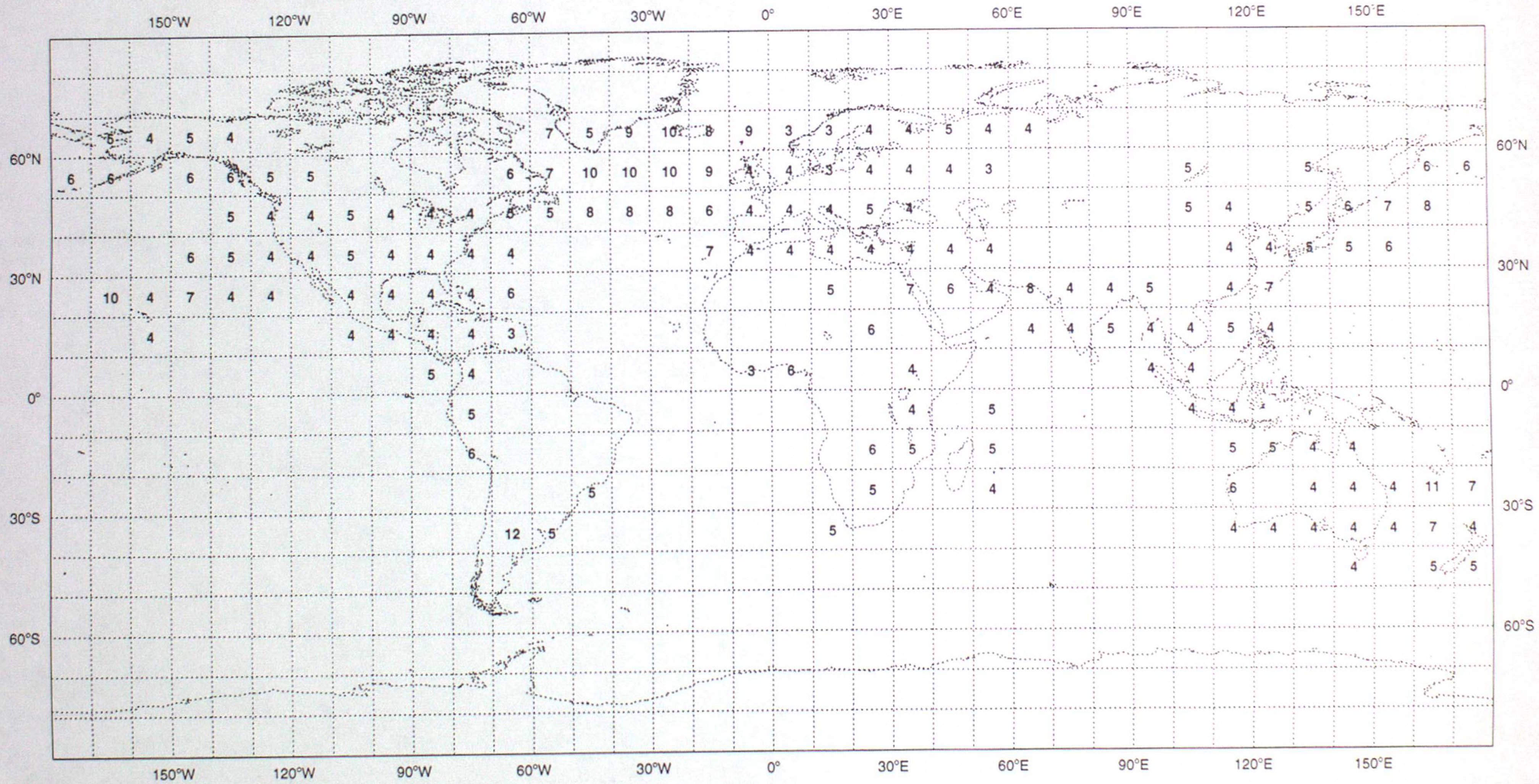

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
6 4 5 4 7 5 9 10 8 9 3 3 4 4 5 4 4
6 6 6 6 5 5 6 7 10 10 10 9 4 4 3 4 4 4 3 5 5 6 6
5 4 4 5 4 4 4 5 5 8 8 8 6 4 4 4 5 4 5 4 5 6 7 8
6 5 4 4 5 4 4 4 4 7 4 4 4 4 4 4 4 4 4 5 5 6
10 4 7 4 4 4 4 4 4 6 5 7 6 4 8 4 4 5 4 7
4 4 4 4 4 3 6 4 4 5 4 4 5 4
5 4 3 6 4 4 4
5 4 5 4 4
6 6 5 5 5 5 4 4
5 5 4 6 4 4 4 11 7
12 5 5 4 4 4 4 4 7 4
4 5 5

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: September 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
20674	12	Z	50	73/ 80	15	0	68.7	140.9	156.7	5
23418	00	Z	50	65/ 57	24	0	83.4	152.7	174.0	4
26477	12	Z	70	56/ 31	19	0	83.7	197.2	214.2	6
28722	12	Z	30	55/ 56	12	1	59.5	280.4	286.7	6
31977	00	Z	100	43/ 132	23	1	64.0	99.9	118.7	4
32098	00	Z	100	49/ 143	28	0	46.2	155.5	162.2	4
33345	00	Z	100	50/ 31	27	0	19.5	-103.7	105.5	4
33791	12	Z	300	48/ 33	21	0	21.5	-73.0	76.2	4
33837	00	Z	50	46/ 31	19	0	82.5	226.8	241.4	6
33946	00	Z	50	45/ 34	17	0	70.5	227.0	237.7	6
34247	12	Z	30	50/ 41	18	0	36.6	210.0	213.2	4
42027	00	Z	1000	34/ 75	17	0	11.2	31.8	33.7	4
42101	00	Z	200	30/ 76	23	0	83.4	-67.0	107.0	7
42101	12	Z	50	30/ 76	15	0	105.9	215.3	239.9	4
42182	12	Z	50	29/ 77	21	0	58.8	177.2	186.7	5
42339	00	Z	200	26/ 73	11	1	98.4	90.9	133.9	6
42369	12	Z	50	27/ 81	16	1	124.7	148.7	194.1	8
42397	00	Z	150	27/ 88	18	2	99.5	-100.6	141.5	9
42397	12	Z	150	27/ 88	16	0	87.1	-84.3	121.2	6
42410	00	Z	50	26/ 92	14	0	116.8	202.1	233.4	8
42492	00	Z	150	26/ 85	20	0	118.3	-25.3	121.0	11
42647	12	Z	50	23/ 73	10	1	91.3	291.2	305.2	9
42667	12	Z	70	23/ 77	11	0	126.5	144.9	192.4	6
42809	00	Z	150	23/ 88	28	0	103.9	-96.4	141.7	6
42867	00	Z	30	21/ 79	16	0	114.9	149.7	188.7	4
42971	12	Z	100	20/ 86	23	0	145.5	-44.2	152.1	4
43003	00	Z	150	19/ 73	20	2	111.4	-90.9	143.8	5
43003	12	Z	30	19/ 73	8	4	83.3	248.5	262.1	8
43014	12	Z	150	20/ 75	15	0	85.1	133.5	158.3	6
43041	12	Z	100	19/ 82	12	0	134.3	20.7	135.9	6
43128	00	Z	150	17/ 78	22	0	79.4	-123.1	146.5	5
43192	00	Z	150	15/ 74	12	3	51.7	-205.9	212.3	7
43279	00	Z	150	13/ 80	23	0	61.1	-145.5	157.8	7
43279	12	Z	150	13/ 80	23	1	101.7	-44.9	111.2	6
43285	00	Z	200	13/ 75	17	1	76.2	-53.6	93.2	4
43333	00	Z	150	12/ 93	24	0	92.1	-67.4	114.2	4
43353	00	Z	250	10/ 76	16	0	66.9	-60.6	90.2	4
43371	00	Z	150	8/ 77	16	1	102.4	-120.4	158.1	5
43466	12	Z	300	7/ 80	7	0	79.4	-45.1	91.4	4
44212	00	Z	100	50/ 92	20	0	49.7	142.3	150.7	4
47122	00	Z	50	37/ 127	28	0	34.3	151.2	155.1	4
47158	00	Z	30	35/ 127	30	0	40.9	208.8	212.8	4
47185	00	Z	30	33/ 126	21	0	65.6	225.1	234.5	4
48565	00	Z	30	8/ 98	18	0	41.1	250.0	253.4	4
58424	12	Z	100	31/ 117	28	0	41.5	143.0	148.9	5
83612	00	Z	50	-20/ -55	12	0	40.6	139.1	144.9	5
89592	00	Z	50	-67/ 93	16	3	81.9	136.6	159.3	4
91366	00	Z	50	9/ 168	20	4	72.7	231.0	242.2	6

Figure 8. TEMP 500 hPa geopotential mean daily count. SEPTEMBER 2001

All hours

Global average number of observations in 24 hours = 1178

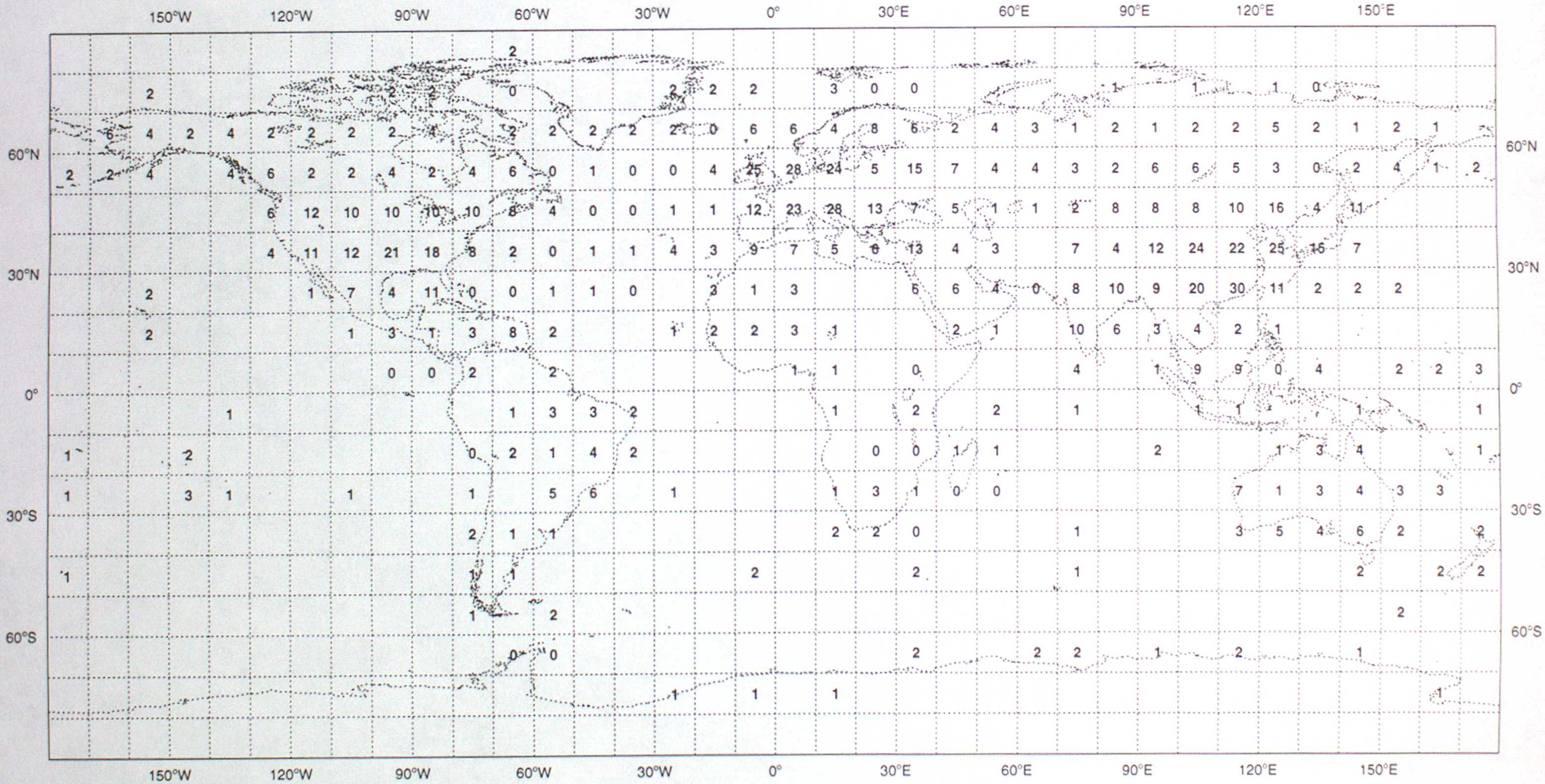

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
2
2 2 2 0 2 2 2 3 0 0 1 1 1 0
6 4 2 4 2 2 2 2 4 2 2 2 2 0 6 6 4 8 6 2 4 3 1 2 1 2 2 5 2 1 2 1
2 2 4 4 6 2 2 4 2 4 6 0 1 0 0 4 25 28 24 5 15 7 4 4 3 2 6 6 5 3 0 2 4 1 2
6 12 10 10 10 10 8 4 0 0 1 1 12 23 28 13 7 5 1 1 2 8 8 8 10 16 4 11
4 11 12 21 18 8 2 0 1 1 4 3 9 7 5 6 13 4 3 7 4 12 24 22 25 16 7
2 1 7 4 11 0 0 1 1 0 3 1 3 6 6 4 0 8 10 9 20 30 11 2 2 2
2 1 3 1 3 8 2 1 2 2 3 1 2 1 10 6 3 4 2 1
0 0 2 2 1 1 0 4 1 9 9 0 4 2 2 3
1 1 3 3 2 1 2 2 1 1 1 1 1
1 2 0 2 1 4 2 0 0 1 1 2 1 3 4 1
1 3 1 1 1 5 6 1 1 3 1 0 0 7 1 3 4 3 3
2 1 1 2 2 0 1 3 5 4 6 2 2
1 1 1 2 2 1 2 2 2
1 2 2
0 0 2 2 2 1 2 1
1 1 1 1

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: September 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : $\geq$ 10 observations and $\geq$ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
PSPIU	00	V	150	-5/ -81	26	0	100	4.3	5.9	24.2	3
PSPIU	12	V	100	-5/ -81	22	0	100	-4.1	-5.4	30.1	3
07761	12	V	150	42/ 9	24	0	8	2.0	3.2	18.2	1
10771	12	V	250	49/ 12	28	0	3	1.0	3.2	15.9	1
17240	12	V	200	38/ 31	23	0	17	-4.6	2.9	15.5	1
17351	12	V	200	37/ 35	25	0	100	-11.2	-1.9	15.0	1
41923	00	V	100	24/ 90	21	0	4	3.7	0.0	15.4	1
43369	00	V	150	8/ 73	10	0	10	7.7	-18.0	25.0	2
43371	00	V	250	8/ 77	11	0	9	7.2	0.8	18.1	1
48455	12	V	100	14/ 101	24	0	100	13.0	5.0	17.4	1
60360	12	V	150	37/ 8	10	1	100	2.0	-7.1	16.6	3
63985	00	V	150	-5/ 56	19	0	100	-1.5	-3.4	16.0	1
68263	12	V	200	-26/ 28	10	0	50	-11.0	-6.8	19.7	2
68442	12	V	250	-29/ 26	11	0	100	-20.9	-4.3	26.3	3
68461	12	V	200	-28/ 28	11	0	100	-2.7	-4.1	15.5	2
68512	12	V	200	-30/ 18	15	0	100	-12.8	0.8	17.9	3
83612	00	V	150	-20/ -55	16	0	100	4.9	-3.0	18.8	3
83612	12	V	150	-20/ -55	13	0	100	2.9	-4.7	16.1	2
89009	00	V	250	-90/ 0	24	0	33	1.1	-4.3	15.2	1
91492	00	V	200	2/-157	11	0	45	12.5	7.0	24.5	2
96935	00	V	300	-7/ 113	12	0	8	3.2	-1.6	17.0	1

Figure 9. TEMP/PILOT 300 hPa wind mean daily count. SEPTEMBER 2001

All hours

Global average number of observations in 24 hours = 1385

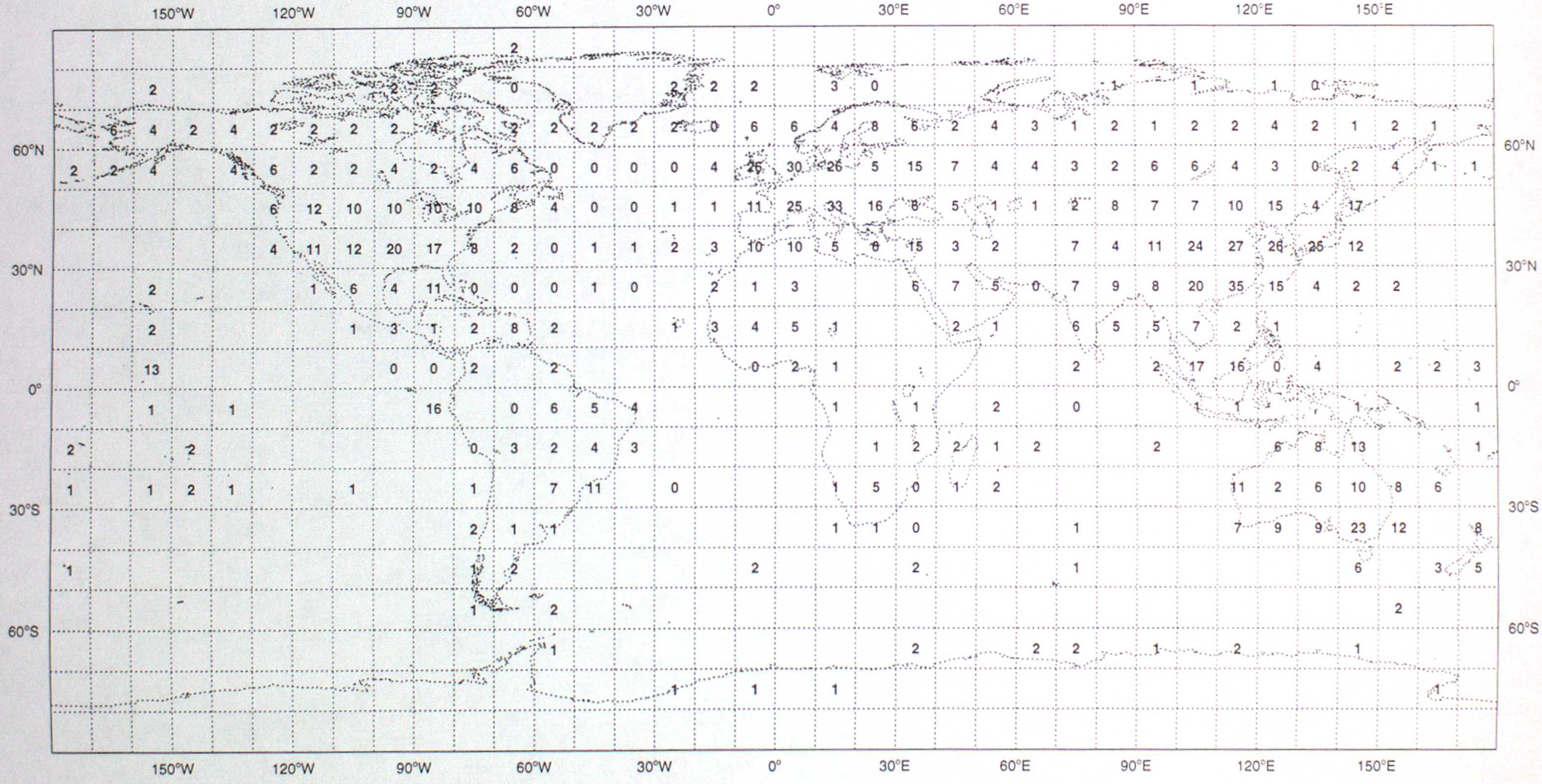

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
2
2 2 2 0 2 2 2 3 0 1 1 1 0
6 4 2 4 2 2 2 2 4 2 2 2 2 2 0 6 6 4 8 6 2 4 3 1 2 1 2 2 4 2 1 2 1
2 2 4 4 6 2 2 4 2 4 6 0 0 0 0 4 25 30 26 5 15 7 4 4 3 2 6 6 4 3 0 2 4 1 1
6 12 10 10 10 10 8 4 0 0 1 1 11 25 33 16 8 5 1 1 2 8 7 7 10 15 4 17
4 11 12 20 17 8 2 0 1 1 2 3 10 10 5 6 15 3 2 7 4 11 24 27 26 25 12
2 1 6 4 11 0 0 0 1 0 2 1 3 6 7 5 0 7 9 8 20 35 15 4 2 2
2 1 3 1 2 8 2 1 3 4 5 1 2 1 6 5 5 7 2 1
13 0 0 2 2 0 2 1 2 2 17 16 0 4 2 2 3
1 1 16 0 6 5 4 1 1 2 0 1 1 1 1
2 2 0 3 2 4 3 1 2 2 1 2 2 6 8 13 1
1 1 2 1 1 1 7 11 0 1 5 0 1 2 11 2 6 10 8 6
2 1 1 1 1 0 1 7 9 9 23 12 8
1 1 2 2 2 1 6 3 5
1 2 2
1 2 2 2 1 2 1
1 1 1 1

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: September 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 500.0 - 150.0 hPa
Element monitored		:WIND DIRECTION in degrees
Parameters monitored		
	:NUM OBS	:Average number of observations at all levels.
	:BIAS	:Mean difference of observations from background values from all levels.
	:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
	:SD	:SD of difference of observations from background values at all levels.

SELECTION CRITERIA

:NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
08594	12	DD	17/ -23	9	-15.2	7.1	18.9
11722	00	DD	49/ 17	24	-11.5	3.6	12.1
29612	12	DD	55/ 78	18	20.1	9.5	13.7
33317	00	DD	50/ 27	26	-11.0	5.1	11.6
42027	00	DD	34/ 75	5	-22.1	9.5	10.5
42182	00	DD	29/ 77	21	-17.8	5.8	11.9
42182	12	DD	29/ 77	24	-20.2	3.2	11.6
48565	00	DD	8/ 98	21	14.3	5.0	14.5
59134	12	DD	24/ 118	14	14.6	9.3	27.7
60360	12	DD	37/ 8	18	17.6	3.4	15.2
62337	12	DD	31/ 34	24	-19.3	6.5	9.4
83612	12	DD	-20/ -55	13	12.0	7.3	20.4
91366	00	DD	9/ 168	16	14.9	8.8	24.0

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

MONTH: September 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from GOES-8, GOES-10, METEOSAT-5, METEOSAT-7, GMS-5, INSAT.

Standard of comparison :Background field from UKMO global model.

Selection Criteria :number of observations > 10.

Data Extracted :Layer 701 - 1000 hPa
401 - 700 hPa
101 - 400 hPa

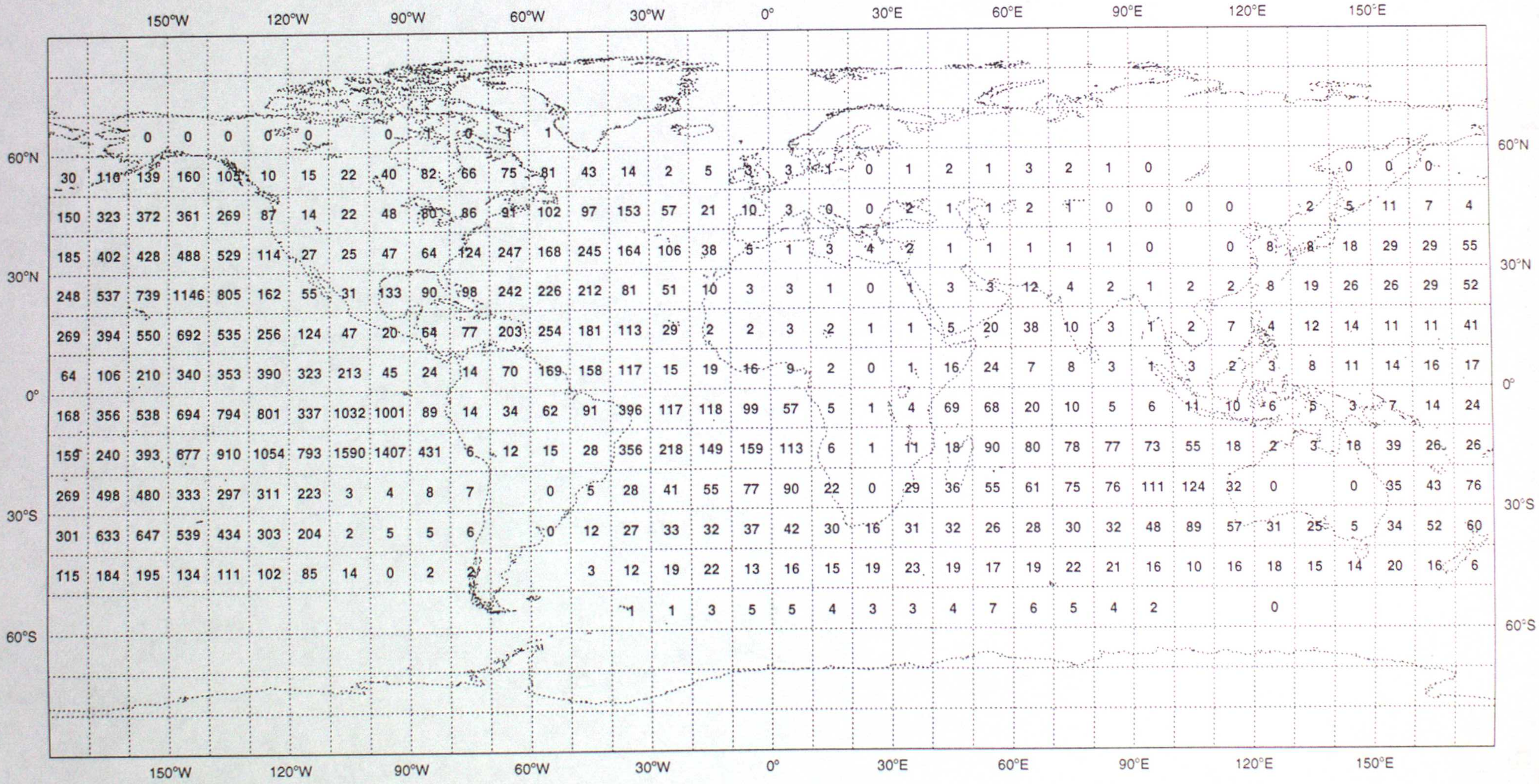
:Mean wind

:Mean observation minus background vector wind differences

:Mean observation minus background speed differences

:RMS of observation minus background vector differences

Figure 10. SATOB 701 - 1000 hPa mean daily count. SEPTEMBER 2001
Global average number of observations in 24 hours = 43978



		0	0	0	0	0		0	1	0	1	1																							
30	116	139	160	105	10	15	22	40	82	66	75	81	43	14	2	5	3	3	1	0	1	2	1	3	2	1	0					0	0	0	
150	323	372	361	269	87	14	22	48	80	86	91	102	97	153	57	21	10	3	0	0	2	1	1	2	1	0	0	0	0		2	5	11	7	4
185	402	428	488	529	114	27	25	47	64	124	247	168	245	164	106	38	5	1	3	4	2	1	1	1	1	1	0		0	8	8	18	29	29	55
248	537	739	1146	805	162	55	31	133	90	98	242	226	212	81	51	10	3	3	1	0	1	3	3	12	4	2	1	2	2	8	19	26	26	29	52
269	394	550	692	535	256	124	47	20	64	77	203	254	181	113	29	2	2	3	2	1	1	5	20	38	10	3	1	2	7	4	12	14	11	11	41
64	106	210	340	353	390	323	213	45	24	14	70	169	158	117	15	19	16	9	2	0	1	16	24	7	8	3	1	3	2	3	8	11	14	16	17
168	356	538	694	794	801	337	1032	1001	89	14	34	62	91	396	117	118	99	57	5	1	4	69	68	20	10	5	6	11	10	6	5	3	7	14	24
159	240	393	677	910	1054	793	1590	1407	431	6	12	15	28	356	218	149	159	113	6	1	11	18	90	80	78	77	73	55	18	2	3	18	39	26	26
269	498	480	333	297	311	223	3	4	8	7		0	5	28	41	55	77	90	22	0	29	36	55	61	75	76	111	124	32	0		0	35	43	76
301	633	647	539	434	303	204	2	5	5	6		0	12	27	33	32	37	42	30	16	31	32	26	28	30	32	48	89	57	31	25	5	34	52	60
115	184	195	134	111	102	85	14	0	2	2			3	12	19	22	13	16	15	19	23	19	17	19	22	21	16	10	16	18	15	14	20	16	6
														1	1	3	5	5	4	3	3	4	7	6	5	4	2			0					

Figure 11. SATOB 701 - 1000 hPa vector mean wind. SEPTEMBER 2001
All observations
Arrows are plotted where greater than 10 obs are present

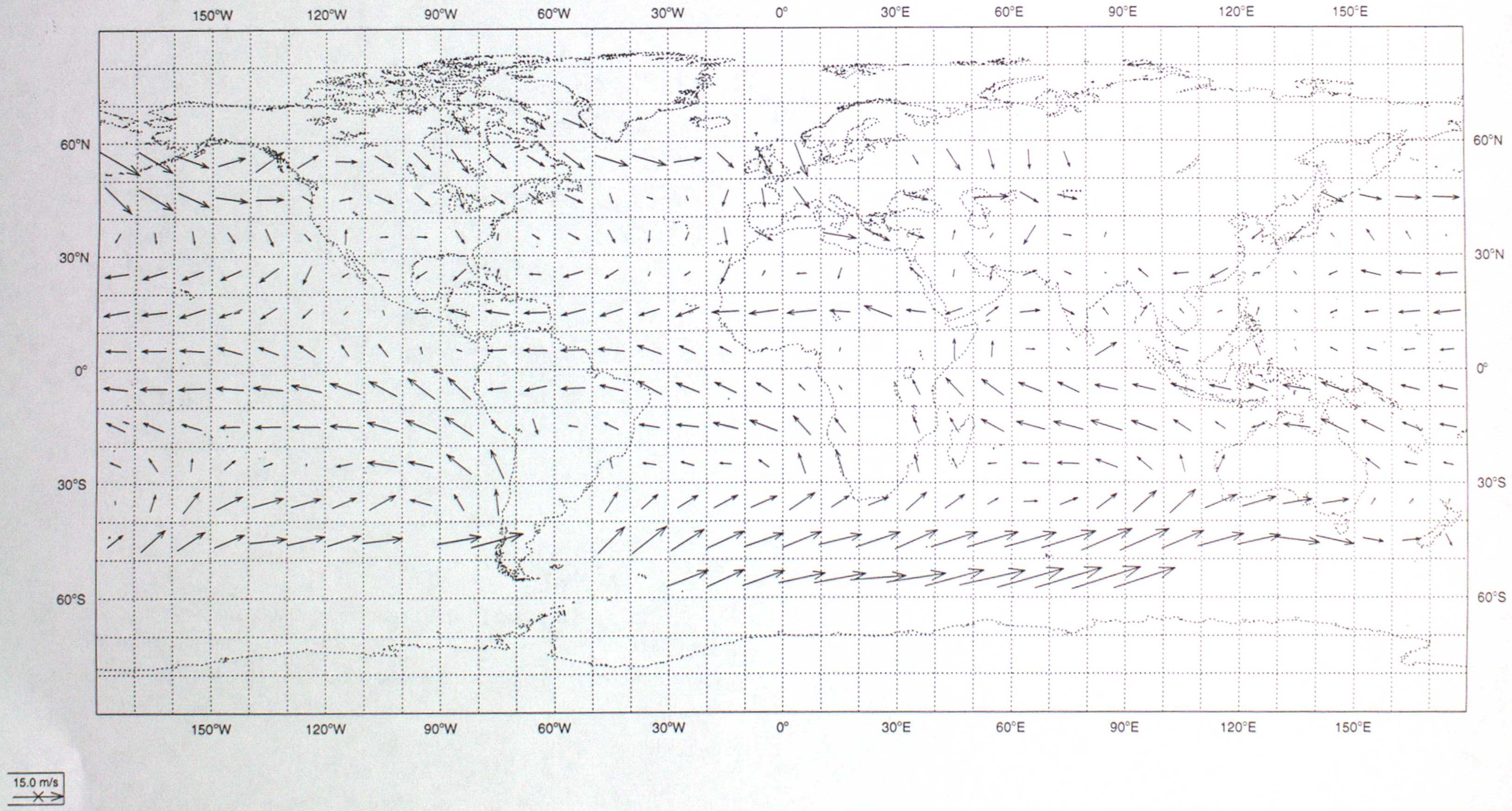

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 12. SATOB 701 - 1000 hPa vector wind differences. SEPTEMBER 2001

All observations

Arrows are plotted where greater than 10 obs are present

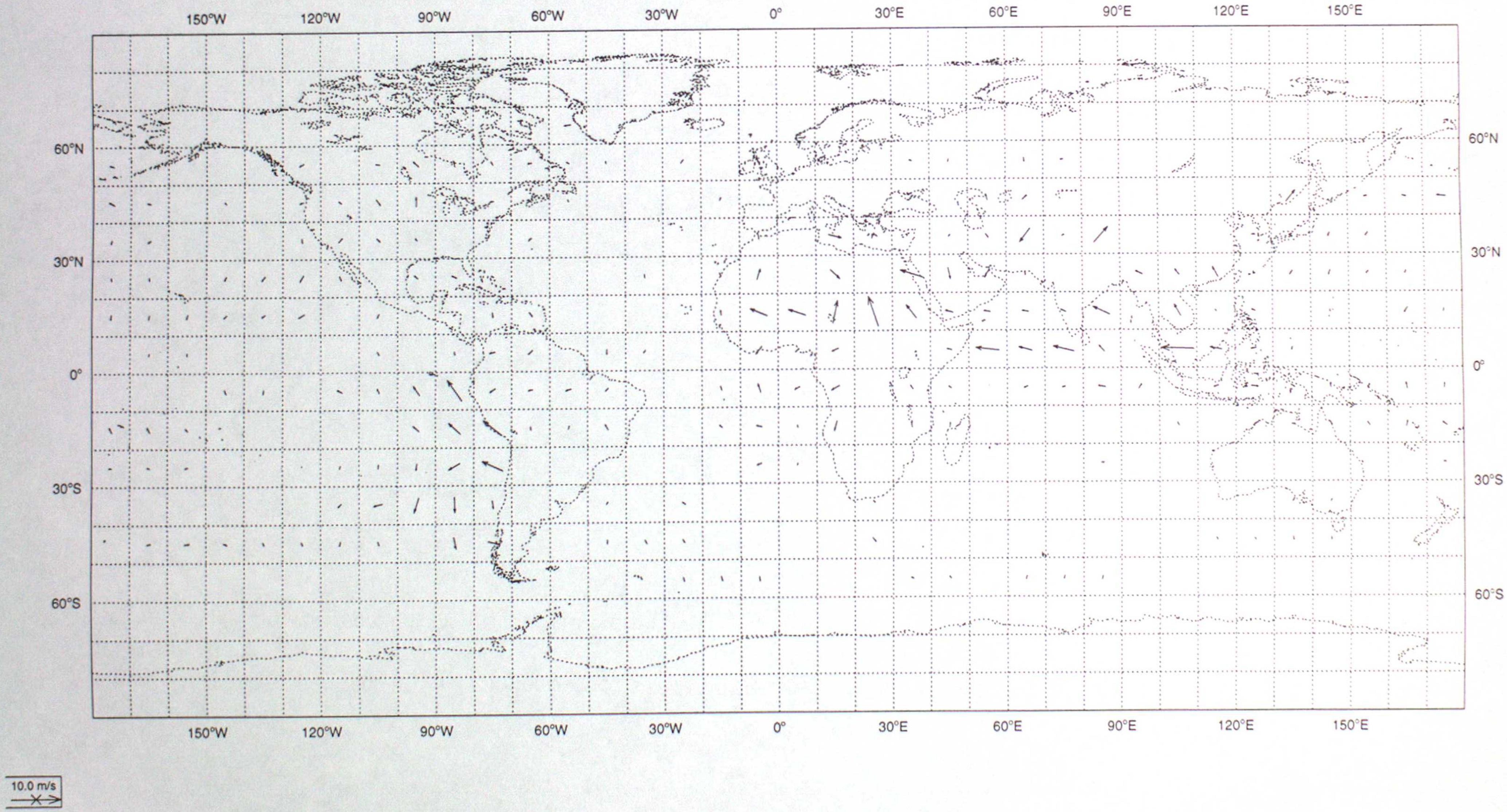

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0 m/s

Figure 13. SATOB 701 - 1000 hPa mean O-B speed differences (ms-1). SEPTEMBER 2001

All observations

Values are plotted where greater than 10 obs are present

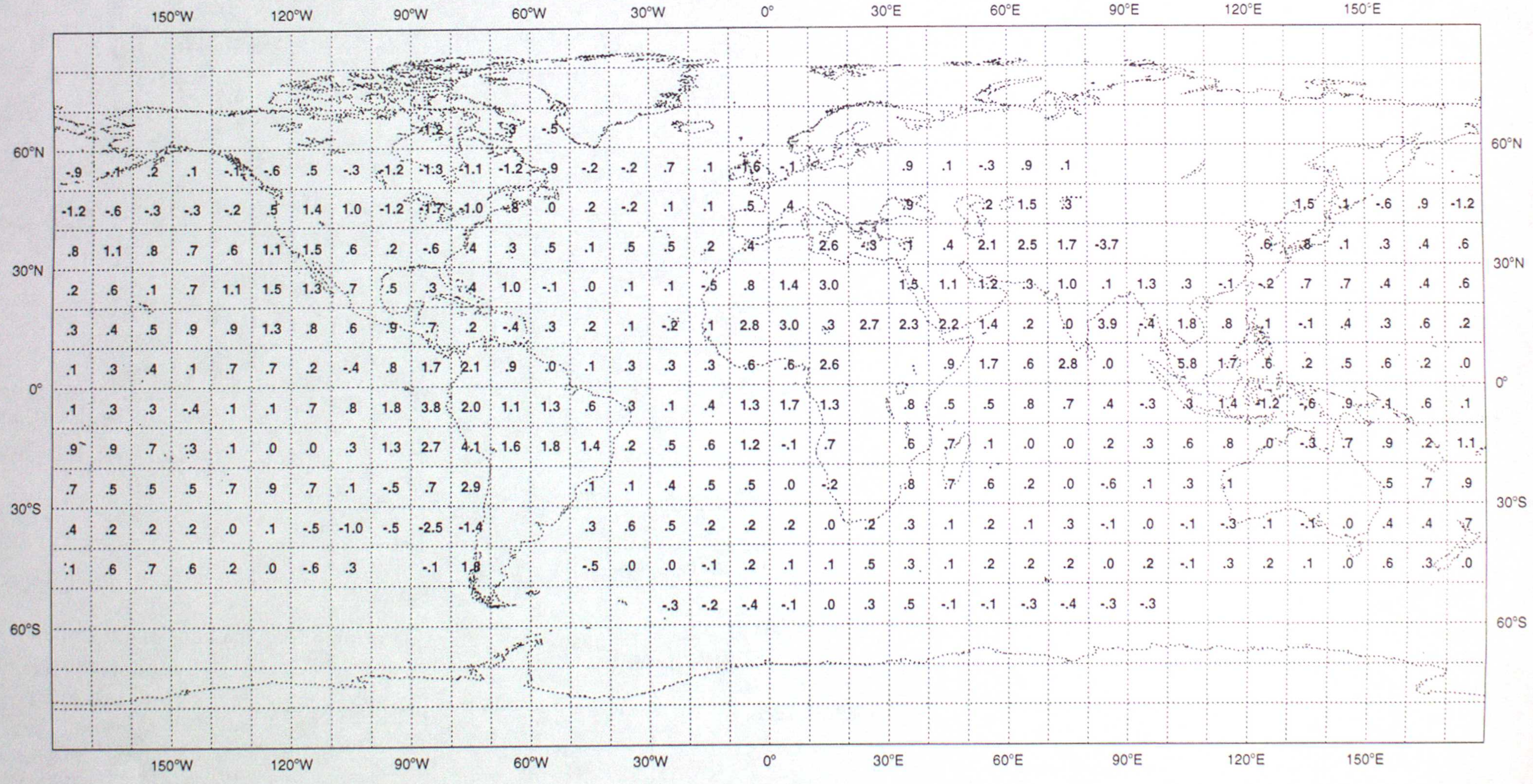
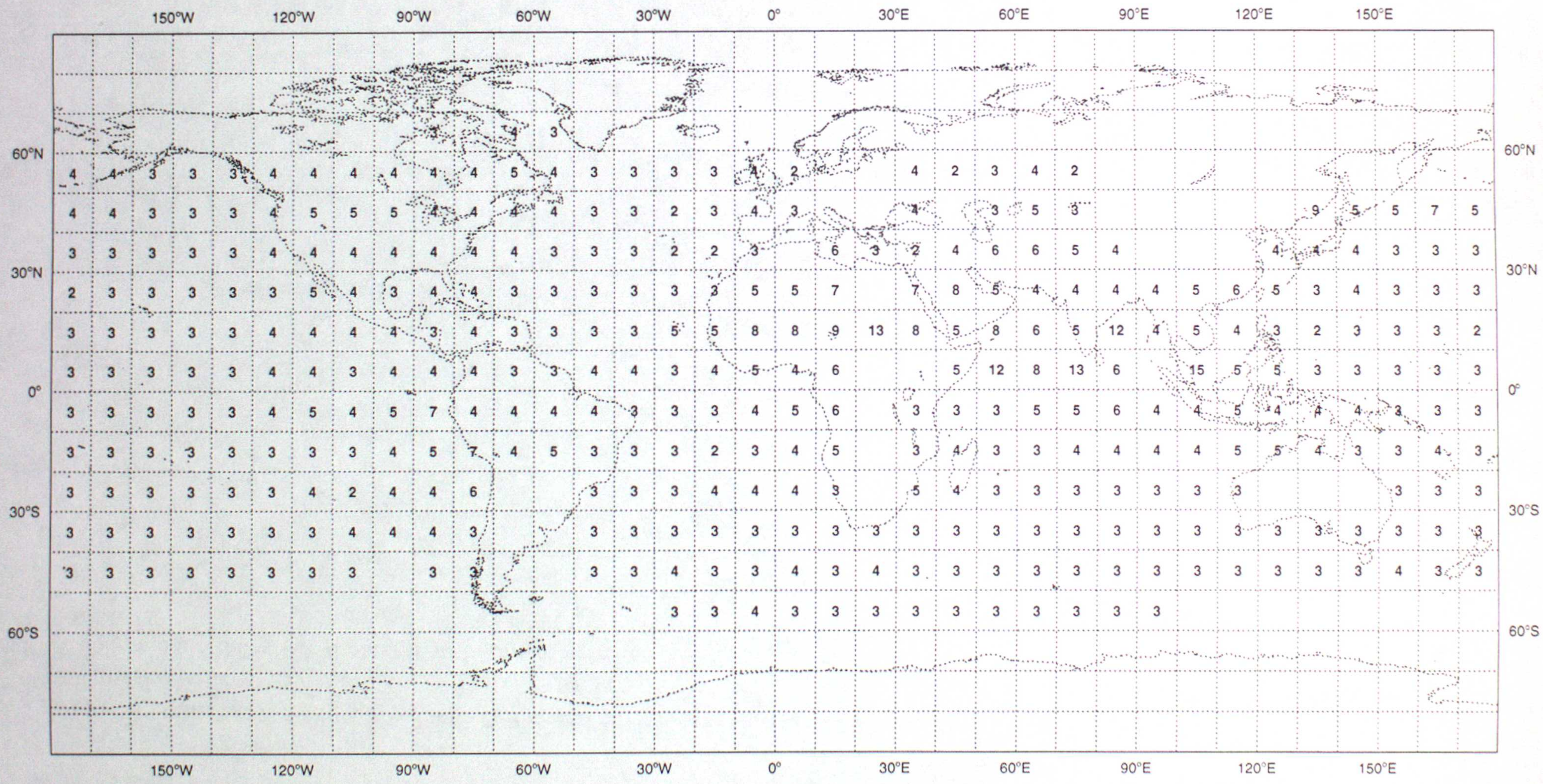

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 14. SATOB 701 - 1000 hPa RMS O-B vector differences (ms-1). SEPTEMBER 2001

All observations

Values are plotted where greater than 10 obs are present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60°N 30°N 0° 30°S 60°S
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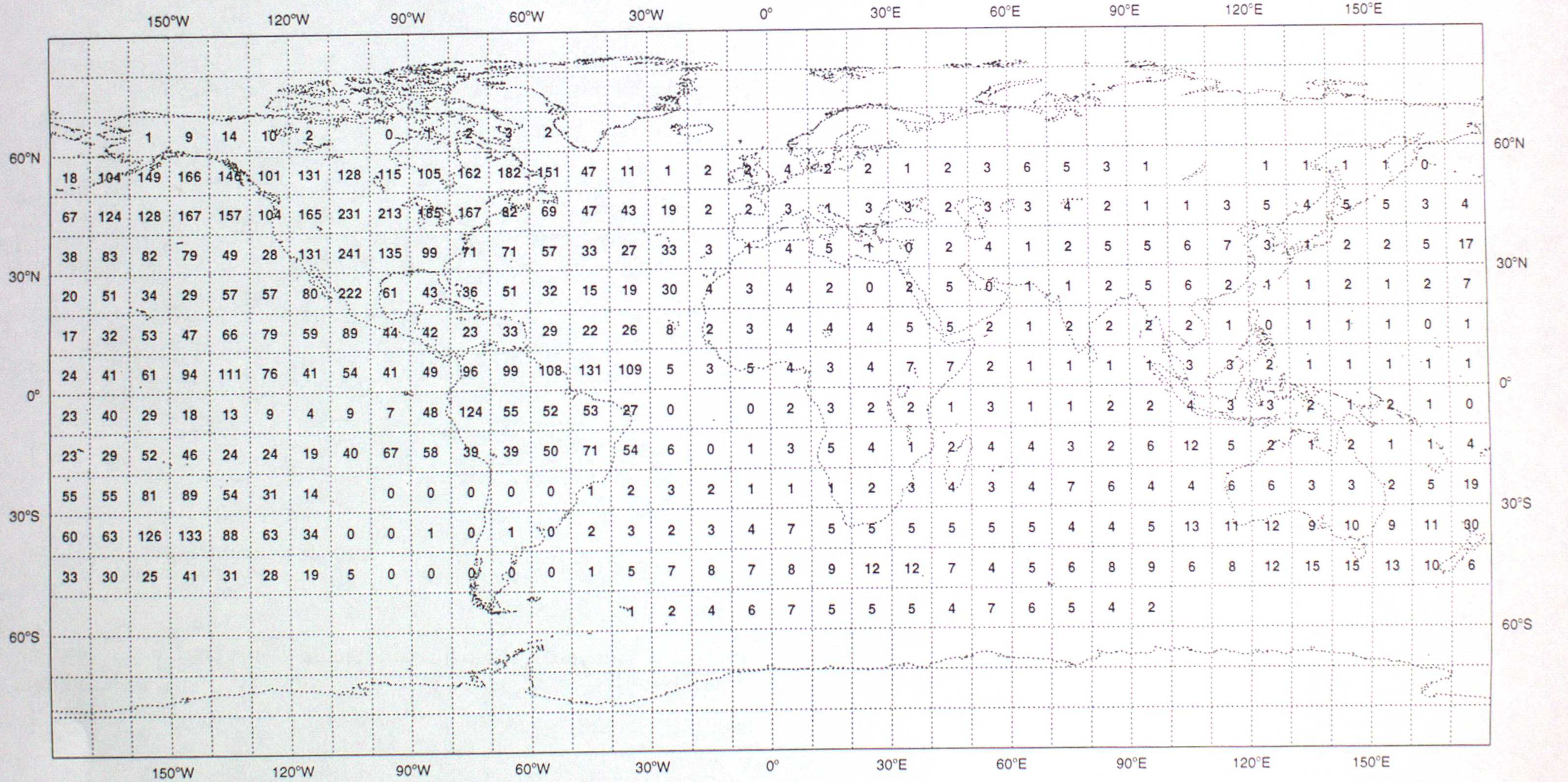
4 4 3 3 3 4 4 4 4 4 4 5 4 3 3 3 3 4 2 4 2 3 4 2
4 4 3 3 3 4 5 5 5 4 4 4 4 3 3 2 3 4 3 4 3 5 3 9 5 5 7 5
3 3 3 3 3 4 4 4 4 4 4 4 3 3 3 2 2 3 6 3 2 4 6 6 5 4 4 4 4 3 3 3
2 3 3 3 3 3 5 4 3 4 4 3 3 3 3 3 3 5 5 7 7 8 5 4 4 4 4 5 6 5 3 4 3 3 3
3 3 3 3 3 4 4 4 4 3 4 3 3 3 3 5 5 8 8 9 13 8 5 8 6 5 12 4 5 4 3 2 3 3 3 2
3 3 3 3 3 4 4 3 4 4 4 3 3 4 4 3 4 5 4 6 5 12 8 13 6 15 5 5 3 3 3 3 3
3 3 3 3 3 4 5 4 5 7 4 4 4 4 3 3 3 4 5 6 3 3 3 5 5 6 4 4 5 4 4 4 3 3 3
3 3 3 3 3 3 3 3 4 5 7 4 5 3 3 3 2 3 4 5 3 4 3 3 4 4 4 4 5 5 4 3 3 4 3
3 3 3 3 3 3 4 2 4 4 6 3 3 3 4 4 4 3 5 4 3 3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 4 4 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 4 3 3 4 3 4 3 3 3 3 3 3 3 3 3 3 3 3 4 3 3
3 3 4 3 3 3 3 3 3 3 3 3 3

Figure 15. SATOB 401 - 700 hPa mean daily count. SEPTEMBER 2001

Global average number of observations in 24 hours = 10877



		1	9	14	10	2		0	1	2	3	2																							
18	104	149	166	146	101	131	128	115	105	162	182	151	47	11	1	2	2	4	2	2	1	2	3	6	5	3	1			1	1	1	1	0	
67	124	128	167	157	104	165	231	213	185	167	82	69	47	43	19	2	2	3	1	3	3	2	3	3	4	2	1	1	3	5	4	5	5	3	4
38	83	82	79	49	28	131	241	135	99	71	71	57	33	27	33	3	1	4	5	1	0	2	4	1	2	5	5	6	7	3	1	2	2	5	17
20	51	34	29	57	57	80	222	61	43	36	51	32	15	19	30	4	3	4	2	0	2	5	0	1	1	2	5	6	2	1	1	2	1	2	7
17	32	53	47	66	79	59	89	44	42	23	33	29	22	26	8	2	3	4	4	4	5	5	2	1	2	2	2	2	1	0	1	1	1	0	1
24	41	61	94	111	76	41	54	41	49	96	99	108	131	109	5	3	5	4	3	4	7	7	2	1	1	1	1	3	3	2	1	1	1	1	1
23	40	29	18	13	9	4	9	7	48	124	55	52	53	27	0		0	2	3	2	2	1	3	1	1	2	2	4	3	3	2	1	2	1	0
23	29	52	46	24	24	19	40	67	58	39	39	50	71	54	6	0	1	3	5	4	1	2	4	4	3	2	6	12	5	2	1	2	1	1	4
55	55	81	89	54	31	14		0	0	0	0	0	1	2	3	2	1	1	1	2	3	4	3	4	7	6	4	4	6	6	3	3	2	5	19
60	63	126	133	88	63	34	0	0	1	0	1	0	2	3	2	3	4	7	5	5	5	5	5	5	4	4	5	13	11	12	9	10	9	11	30
33	30	25	41	31	28	19	5	0	0	0	0	0	1	5	7	8	7	8	9	12	12	7	4	5	6	8	9	6	8	12	15	15	13	10	6
														1	2	4	6	7	5	5	5	4	7	6	5	4	2								

Figure 16. SATOB 401 - 700 hPa vector mean wind. SEPTEMBER 2001
All observations
Arrows are plotted where greater than 10 obs are present

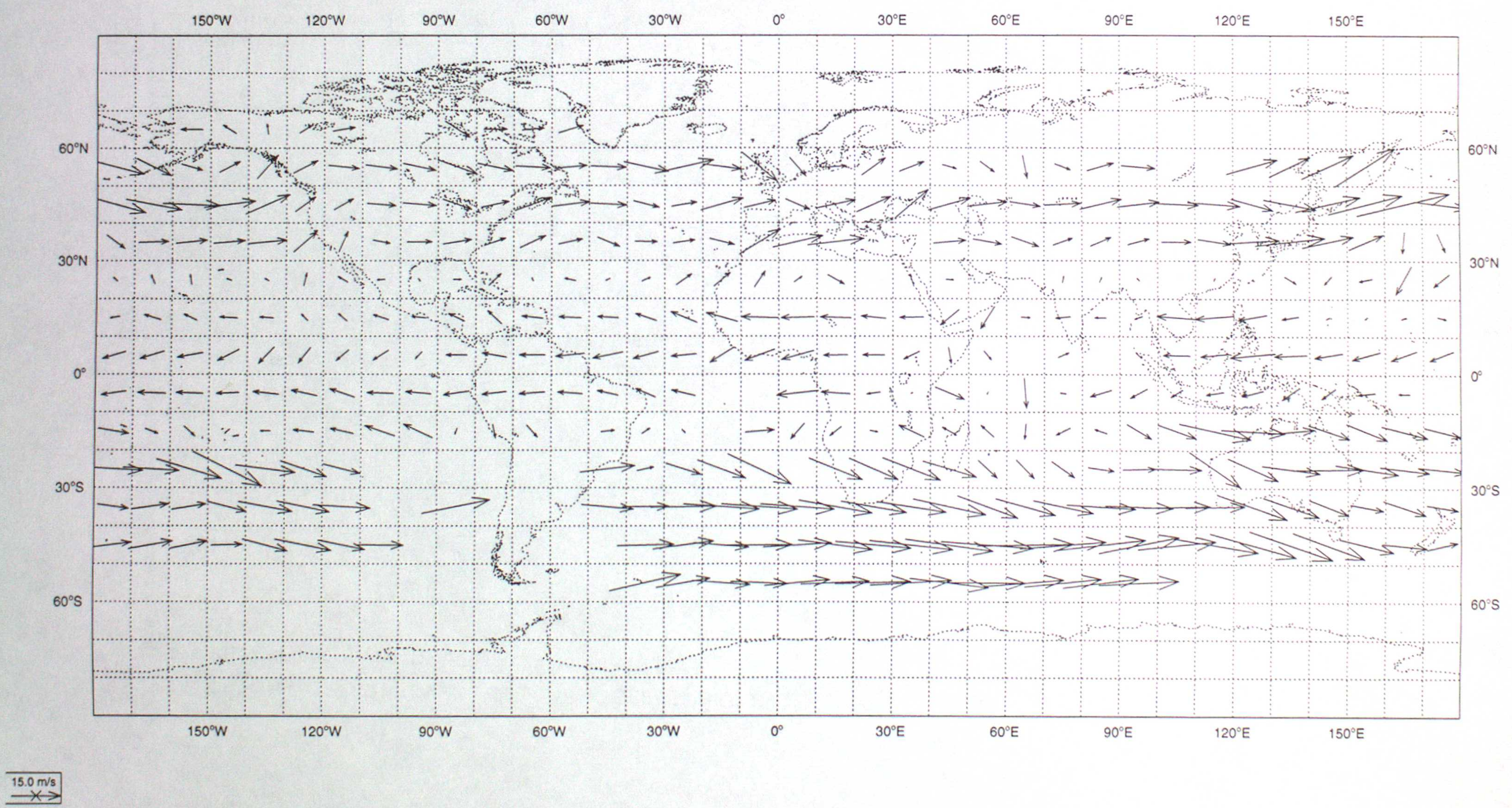
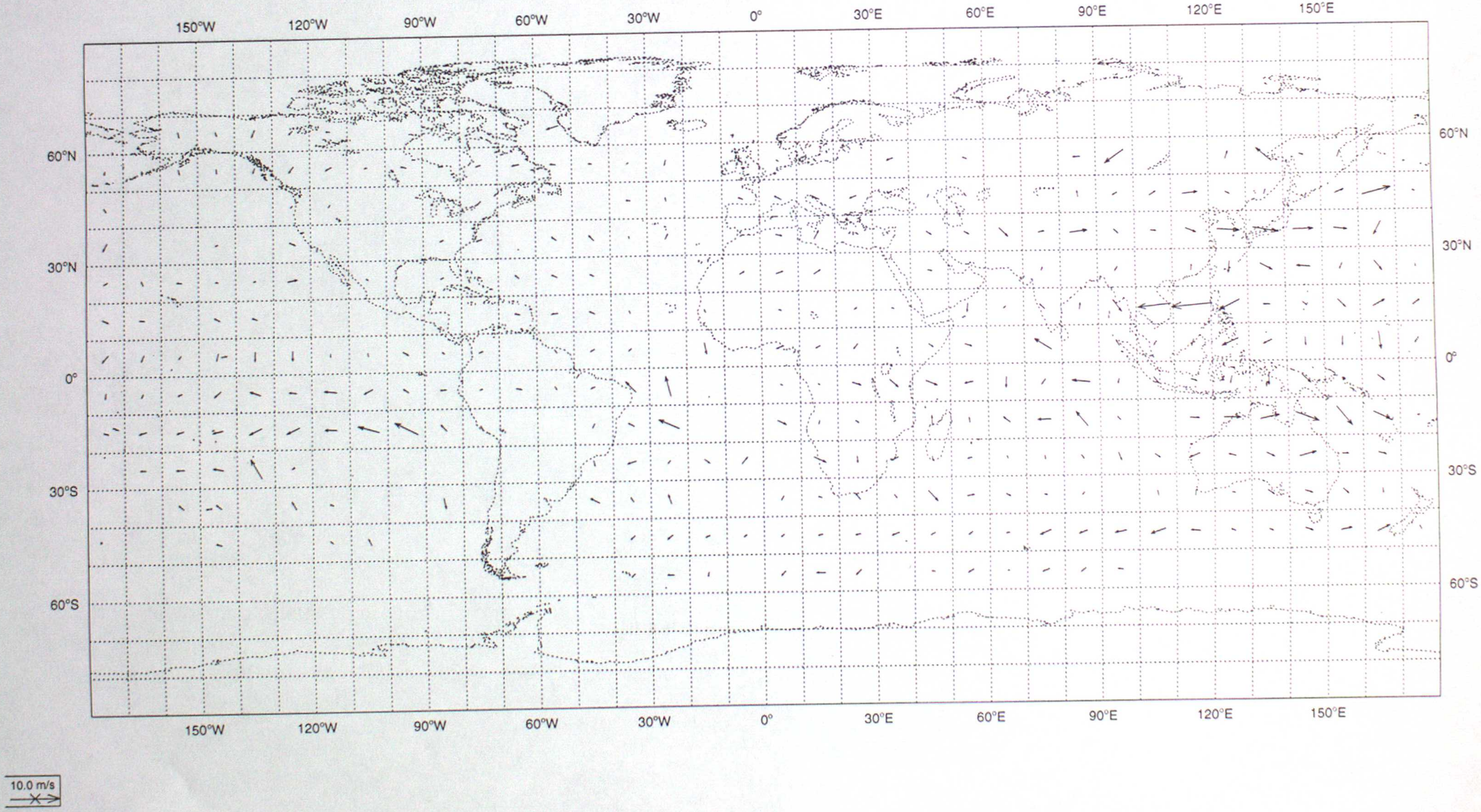

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 17. SATOB 401 - 700 hPa vector wind differences. SEPTEMBER 2001

All observations

Arrows are plotted where greater than 10 obs are present



150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0 m/s

Figure 18. SATOB 401 - 700 hPa mean O-B speed differences (ms-1). SEPTEMBER 2001

All observations

Values are plotted where greater than 10 obs are present

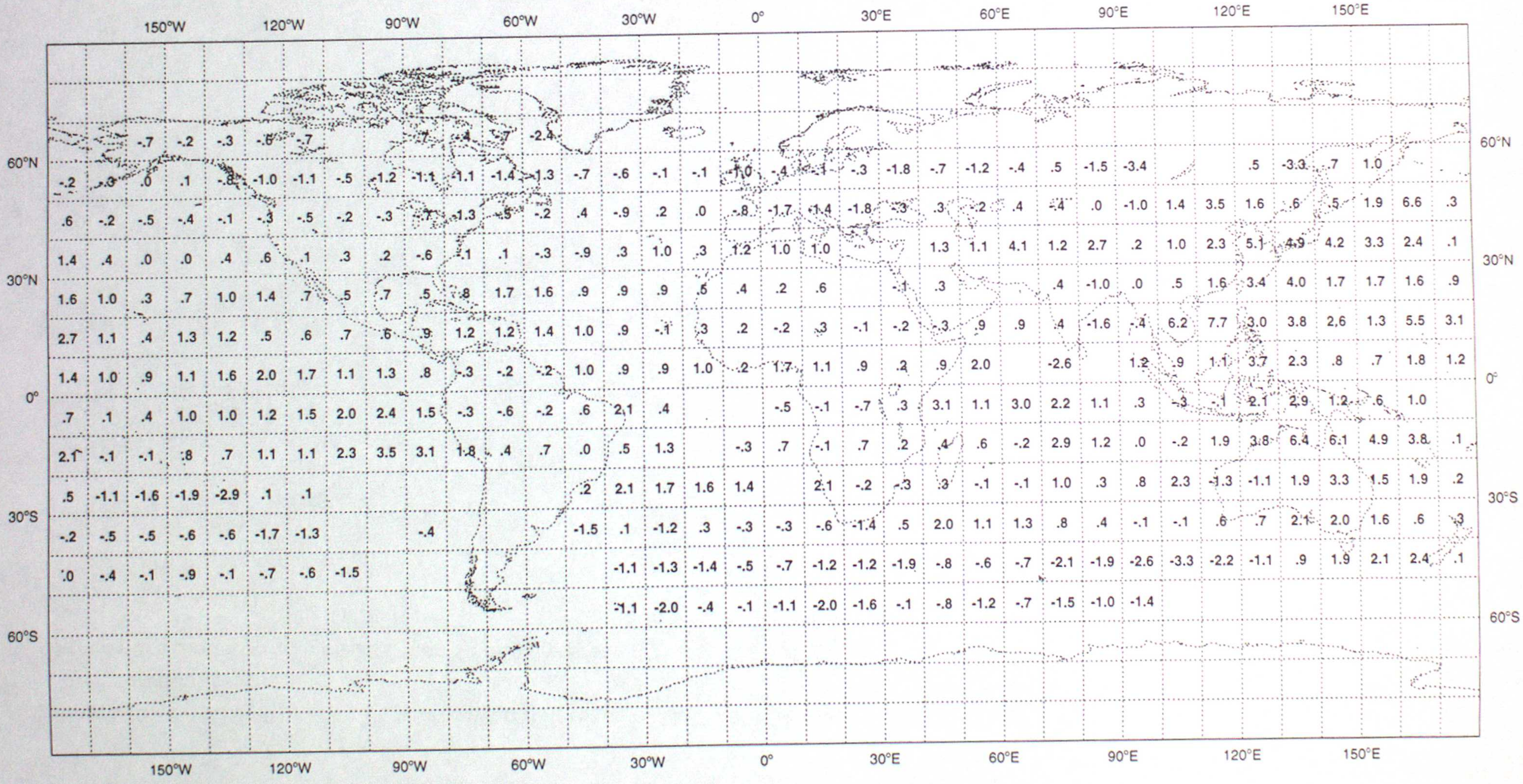

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
-.7 -.2 -.3 -.6 -.7 -.7 -.4 -.7 -2.4
-.2 -.3 .0 .1 -.8 -1.0 -1.1 -.5 -1.2 -1.1 -1.1 -1.4 -1.3 -.7 -.6 -.1 -.1 -1.0 -.4 -.1 -.3 -1.8 -.7 -1.2 -.4 .5 -1.5 -3.4 .5 -3.3 .7 1.0
.6 -.2 -.5 -.4 -.1 -.3 -.5 -.2 -.3 -.7 -1.3 -.5 -.2 .4 -.9 .2 .0 -.8 -1.7 -1.4 -1.8 -.3 .3 -.2 .4 -.4 .0 -1.0 1.4 3.5 1.6 .6 .5 1.9 6.6 .3
1.4 .4 .0 .0 .4 .6 .1 .3 .2 -.6 .1 .1 -.3 -.9 .3 1.0 .3 1.2 1.0 1.0 1.3 1.1 4.1 1.2 2.7 .2 1.0 2.3 5.1 4.9 4.2 3.3 2.4 .1
1.6 1.0 .3 .7 1.0 1.4 .7 .5 .7 .5 .8 1.7 1.6 .9 .9 .9 .5 .4 .2 .6 -.1 .3 .4 -1.0 .0 .5 1.6 3.4 4.0 1.7 1.7 1.6 .9
2.7 1.1 .4 1.3 1.2 .5 .6 .7 .6 .9 1.2 1.2 1.4 1.0 .9 -.1 .3 .2 -.2 .3 -.1 -.2 -.3 .9 .9 .4 -1.6 -.4 6.2 7.7 3.0 3.8 2.6 1.3 5.5 3.1
1.4 1.0 .9 1.1 1.6 2.0 1.7 1.1 1.3 .8 -.3 -.2 -.2 1.0 .9 .9 1.0 .2 1.7 1.1 .9 .2 .9 2.0 -2.6 1.2 .9 1.1 3.7 2.3 .8 .7 1.8 1.2
.7 .1 .4 1.0 1.0 1.2 1.5 2.0 2.4 1.5 -.3 -.6 -.2 .6 2.1 .4 -.5 -.1 -.7 .3 3.1 1.1 3.0 2.2 1.1 .3 -.3 -.1 2.1 2.9 1.2 .6 1.0
2.1 -.1 -.1 .8 .7 1.1 1.1 2.3 3.5 3.1 1.8 .4 .7 .0 .5 1.3 -.3 .7 -.1 .7 .2 .4 .6 -.2 2.9 1.2 .0 -.2 1.9 3.8 6.4 6.1 4.9 3.8 .1
.5 -1.1 -1.6 -1.9 -2.9 .1 .1 .2 2.1 1.7 1.6 1.4 2.1 -.2 -.3 .3 -.1 -.1 1.0 .3 .8 2.3 -1.3 -1.1 1.9 3.3 1.5 1.9 .2
-.2 -.5 -.5 -.6 -.6 -1.7 -1.3 -.4 -1.5 .1 -1.2 .3 -.3 -.3 -.6 -1.4 .5 2.0 1.1 1.3 .8 .4 -.1 -.1 .6 .7 2.1 2.0 1.6 .6 .3
.0 -.4 -.1 -.9 -.1 -.7 -.6 -1.5 -1.1 -1.3 -1.4 -.5 -.7 -1.2 -1.2 -1.9 -.8 -.6 -.7 -2.1 -1.9 -2.6 -3.3 -2.2 -1.1 .9 1.9 2.1 2.4 .1
-1.1 -2.0 -.4 -.1 -1.1 -2.0 -1.6 -.1 -.8 -1.2 -.7 -1.5 -1.0 -1.4

Figure 19. SATOB 401 - 700 hPa RMS O-B vector differences (ms-1). SEPTEMBER 2001

All observations

Values are plotted where greater than 10 obs are present

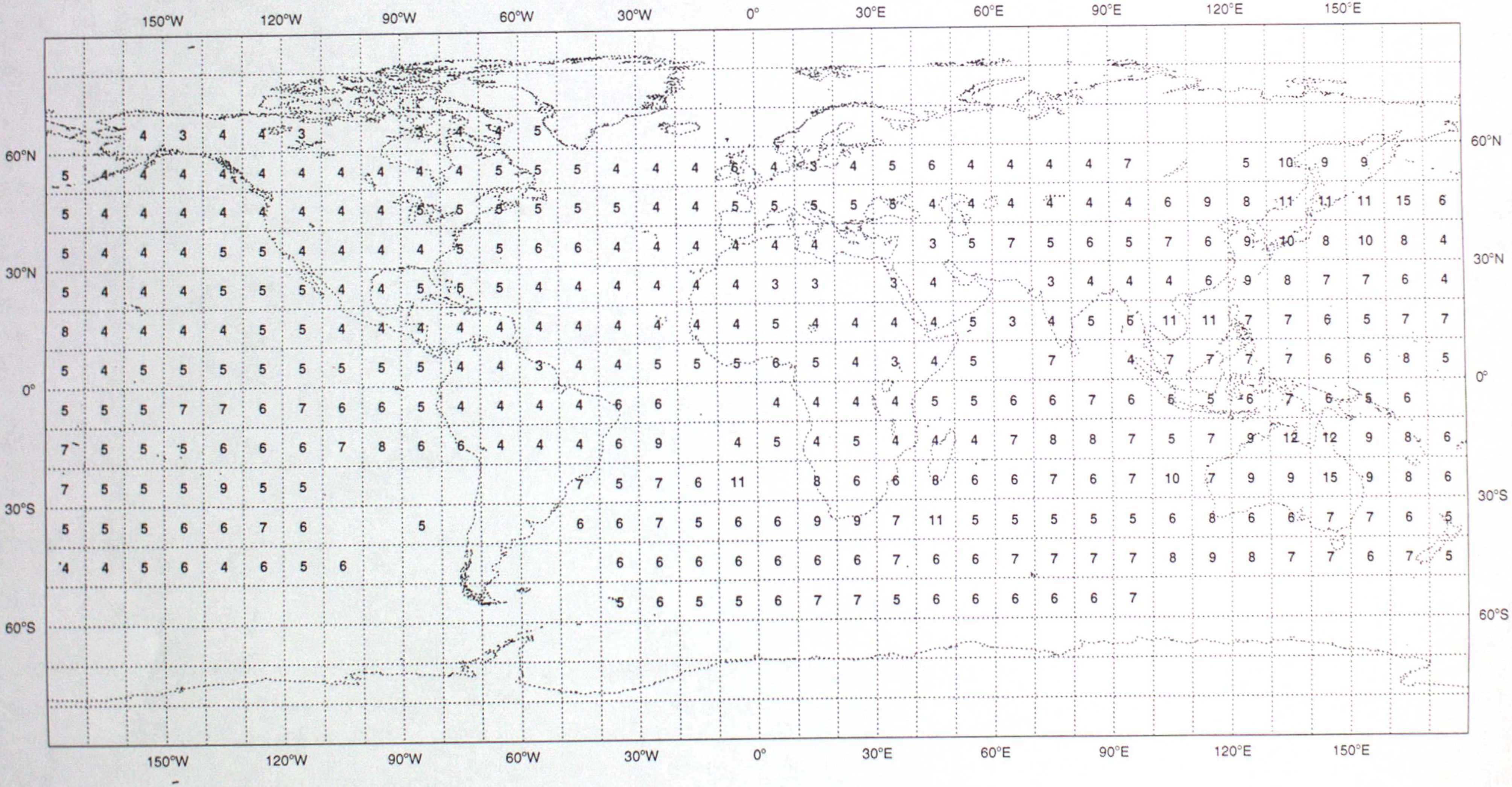
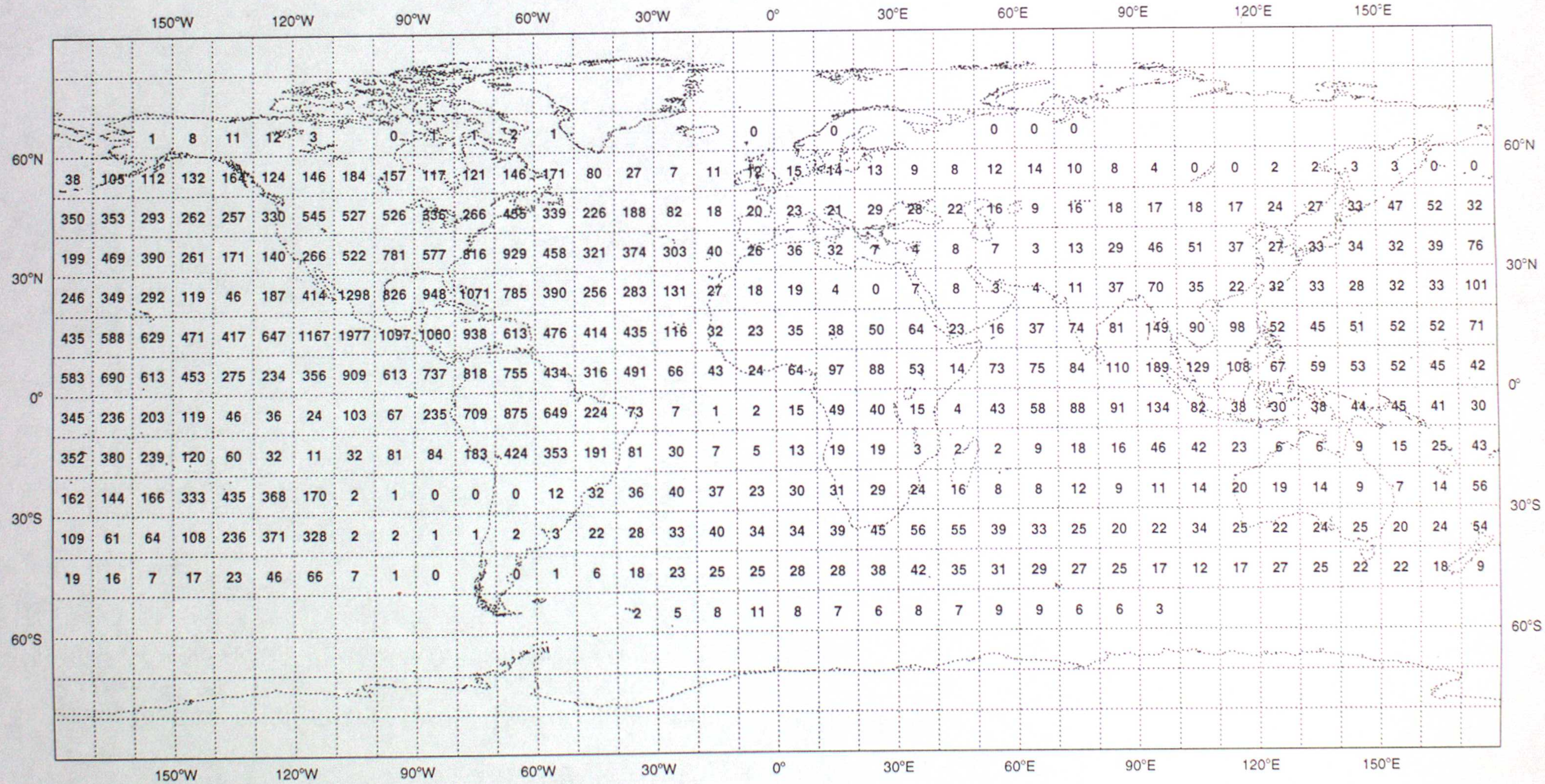

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
4 3 4 4 3 3 4 4 5
5 4 4 4 4 4 4 4 4 4 5 5 5 4 4 4 6 4 3 4 5 6 4 4 4 4 7 5 10 9 9
5 4 4 4 4 4 4 4 4 5 5 5 5 5 4 4 4 5 5 5 5 8 4 4 4 4 4 4 6 9 8 11 11 11 15 6
5 4 4 4 5 5 4 4 4 4 5 5 6 6 4 4 4 4 4 4 3 5 7 5 6 5 7 6 9 10 8 10 8 4
5 4 4 4 5 5 5 4 4 5 6 5 4 4 4 4 4 4 3 3 3 4 3 4 4 4 6 9 8 7 7 6 4
8 4 4 4 4 5 5 4 4 4 4 4 4 4 4 4 4 4 5 4 4 4 4 5 3 4 5 6 11 11 7 7 6 5 7 7
5 4 5 5 5 5 5 5 5 5 4 4 3 4 4 5 5 5 6 5 4 3 4 5 7 4 7 7 7 7 6 6 8 5
5 5 5 7 7 6 7 6 6 5 4 4 4 4 6 6 4 4 4 4 5 5 6 6 7 6 6 5 6 7 6 5 6
7 5 5 5 6 6 6 7 8 6 6 4 4 4 6 9 4 5 4 5 4 4 4 7 8 8 7 5 7 9 12 12 9 8 6
7 5 5 5 9 5 5 7 5 7 6 11 8 6 6 8 6 6 7 6 7 10 7 9 9 15 9 8 6
5 5 5 6 6 7 6 5 6 6 7 5 6 6 9 9 7 11 5 5 5 5 5 6 8 6 6 7 7 6 5
4 4 5 6 4 6 5 6 6 6 6 6 6 6 6 7 6 6 7 7 7 7 8 9 8 7 7 6 7 5
5 6 5 5 6 7 7 5 6 6 6 6 6 7

Figure 20. SATOB 101 - 400 hPa mean daily count. SEPTEMBER 2001
Global average number of observations in 24 hours = 58980



		1	8	11	12	3		0	1	1	2	1					0		0				0	0	0										
38	105	112	132	164	124	146	184	157	117	121	146	171	80	27	7	11	12	15	14	13	9	8	12	14	10	8	4	0	0	2	2	3	3	0	0
350	353	293	262	257	330	545	527	526	336	266	455	339	226	188	82	18	20	23	21	29	28	22	16	9	16	18	17	18	17	24	27	33	47	52	32
199	469	390	261	171	140	266	522	781	577	816	929	458	321	374	303	40	26	36	32	7	4	8	7	3	13	29	46	51	37	27	33	34	32	39	76
246	349	292	119	46	187	414	1298	826	948	1071	785	390	256	283	131	27	18	19	4	0	7	8	3	4	11	37	70	35	22	32	33	28	32	33	101
435	588	629	471	417	647	1167	1977	1097	1060	938	613	476	414	435	116	32	23	35	38	50	64	23	16	37	74	81	149	90	98	52	45	51	52	52	71
583	690	613	453	275	234	356	909	613	737	818	755	434	316	491	66	43	24	64	97	88	53	14	73	75	84	110	189	129	108	67	59	53	52	45	42
345	236	203	119	46	36	24	103	67	235	709	875	649	224	73	7	1	2	15	49	40	15	4	43	58	88	91	134	82	38	30	38	44	45	41	30
352	380	239	120	60	32	11	32	81	84	183	424	353	191	81	30	7	5	13	19	19	3	2	2	9	18	16	46	42	23	6	6	9	15	25	43
162	144	166	333	435	368	170	2	1	0	0	0	12	32	36	40	37	23	30	31	29	24	16	8	8	12	9	11	14	20	19	14	9	7	14	56
109	61	64	108	236	371	328	2	2	1	1	2	3	22	28	33	40	34	34	39	45	56	55	39	33	25	20	22	34	25	22	24	25	20	24	54
19	16	7	17	23	46	66	7	1	0		0	1	6	18	23	25	25	28	28	38	42	35	31	29	27	25	17	12	17	27	25	22	22	18	9
														2	5	8	11	8	7	6	8	7	9	9	6	6	3								

Figure 21. SATOB 101 - 400 hPa vector mean wind. SEPTEMBER 2001

All observations

Arrows are plotted where greater than 10 obs are present

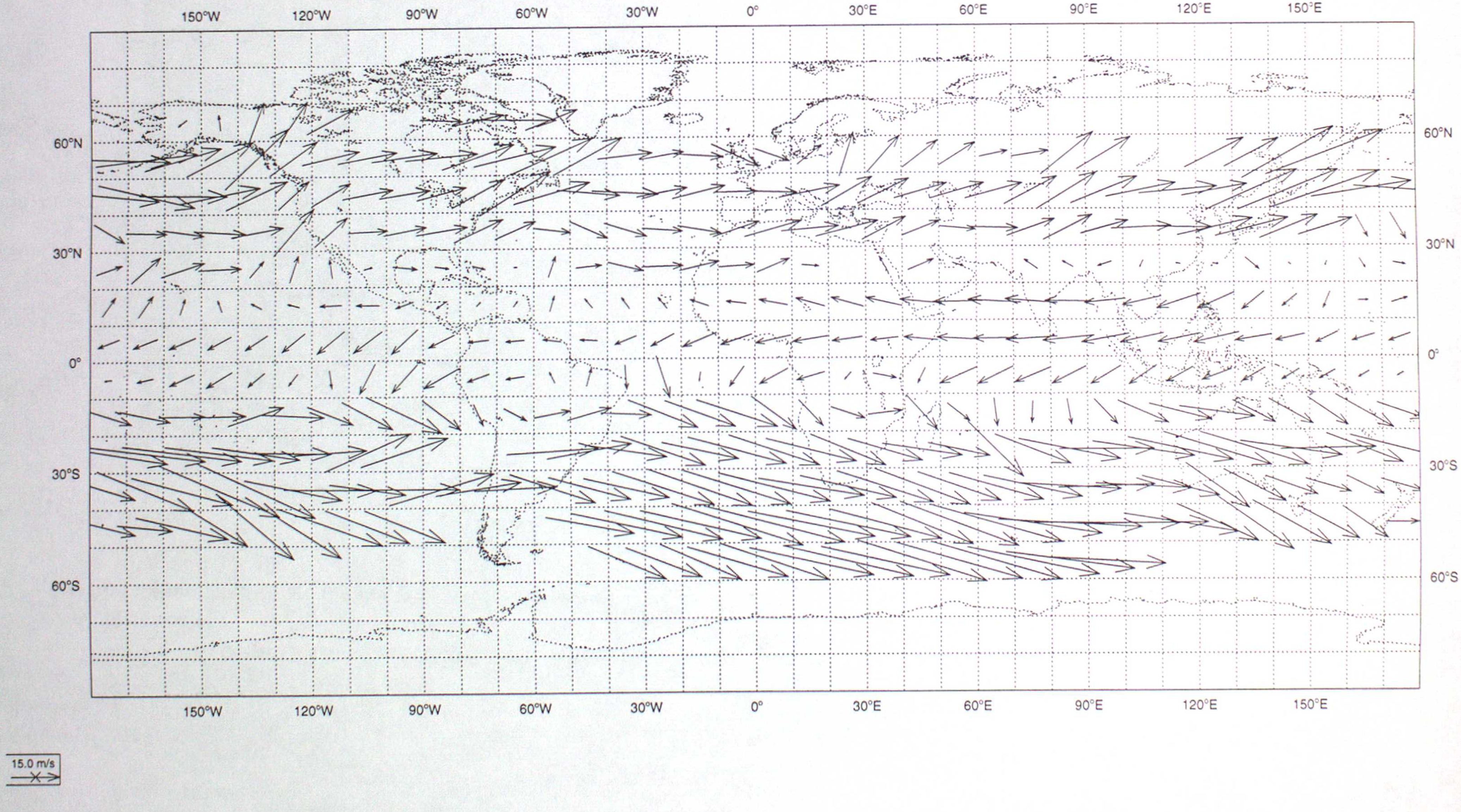

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 22. SATOB 101 - 400 hPa vector wind differences. SEPTEMBER 2001

All observations

Arrows are plotted where greater than 10 obs are present

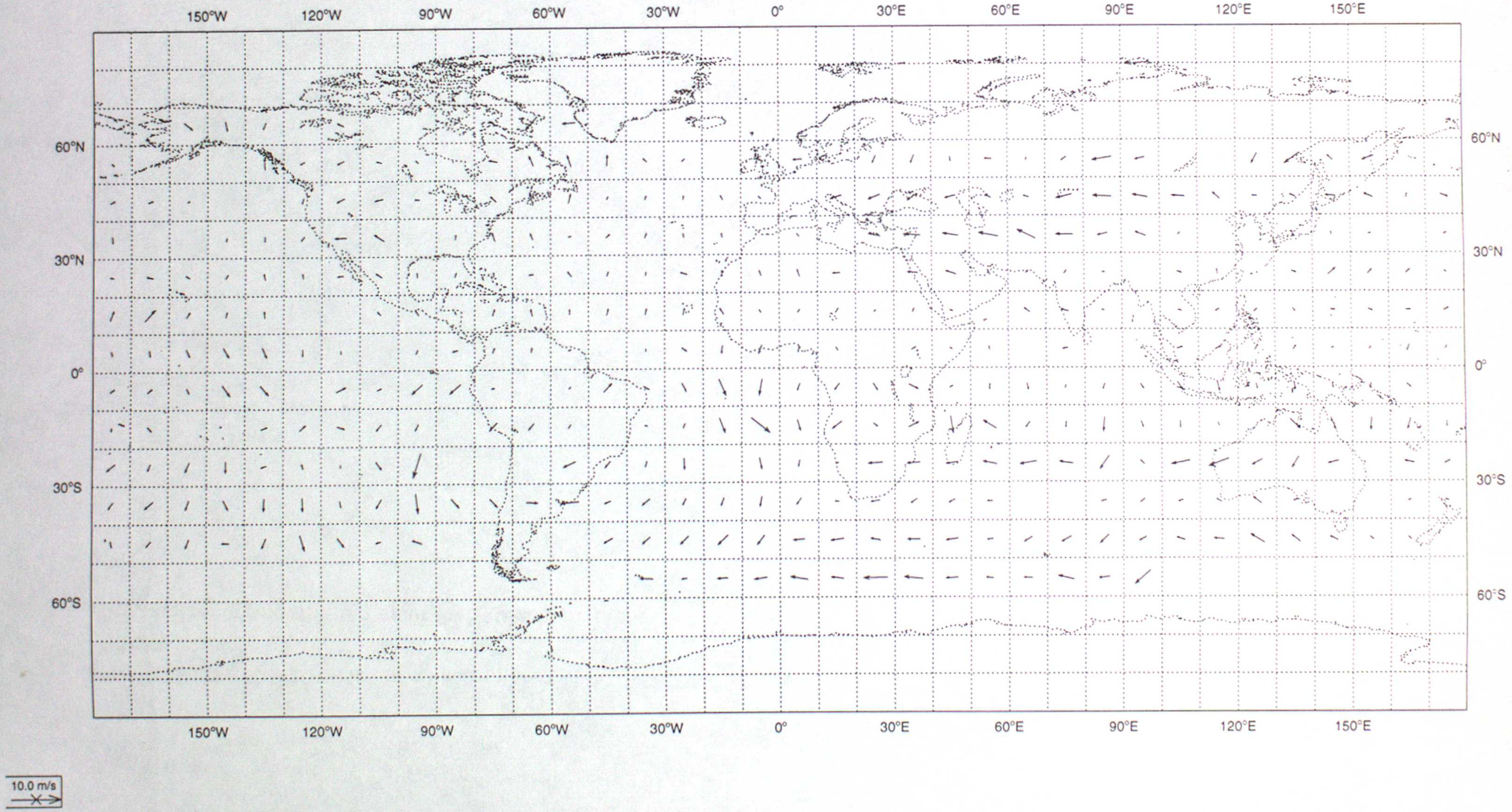

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0 m/s

Figure 23. SATOB 101 - 400 hPa mean O-B speed differences (ms-1). SEPTEMBER 2001
All observations
Values are plotted where greater than 10 obs are present

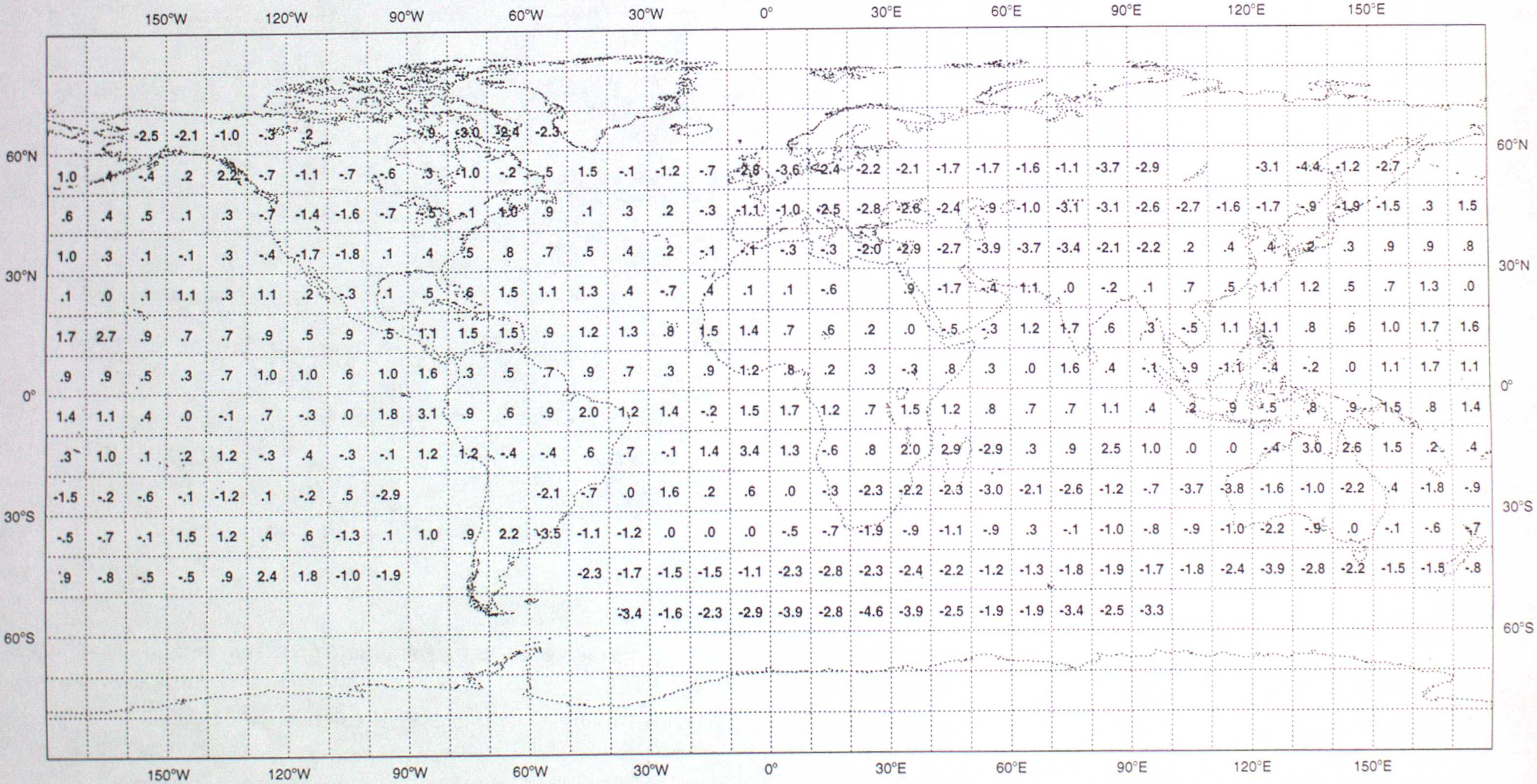
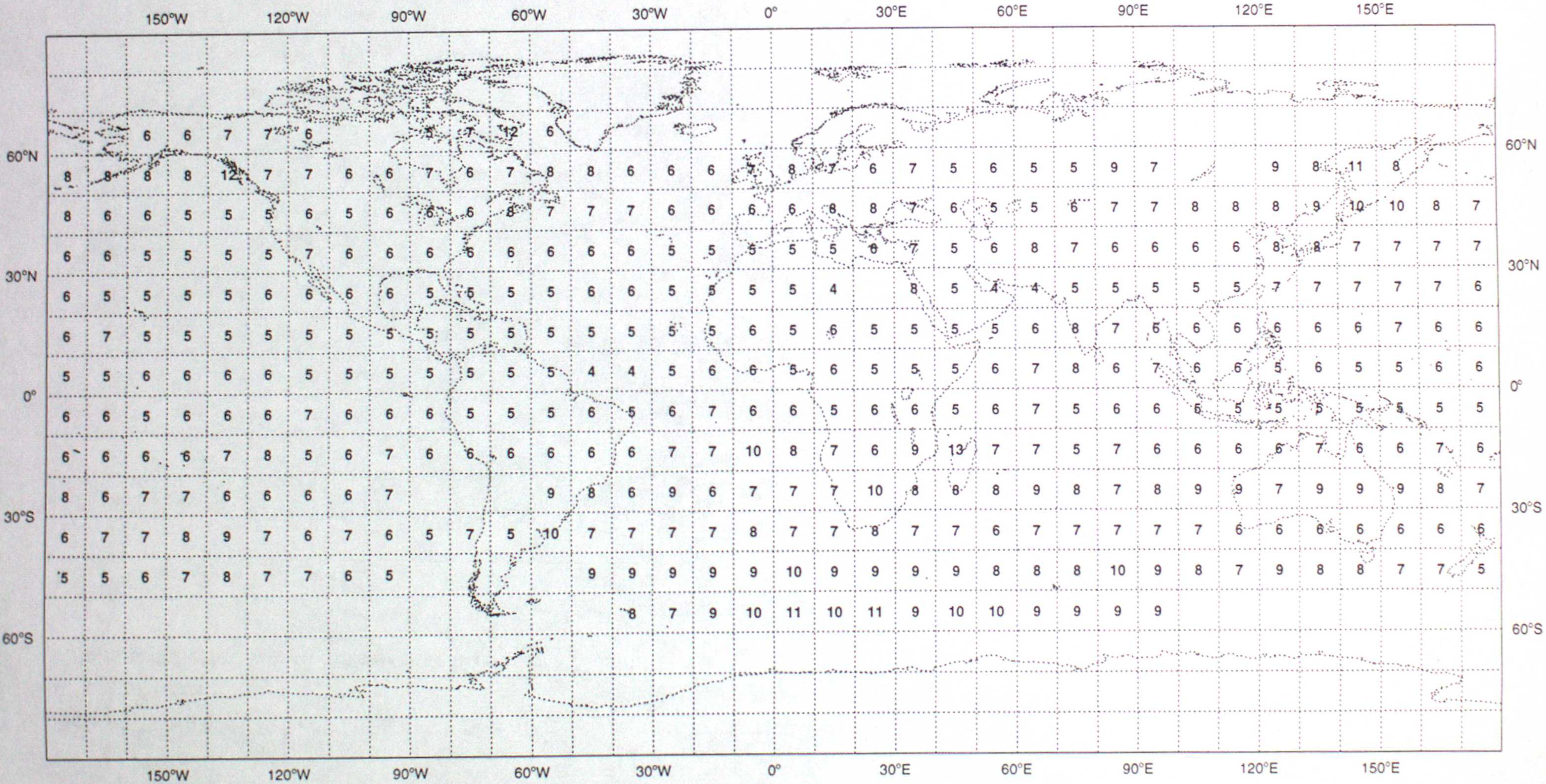

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-2.5 -2.1 -1.0 -.3 .2 .9 -3.0 -2.4 -2.3
1.0 .4 -.4 .2 2.2 -.7 -1.1 -.7 -.6 .3 -1.0 -.2 .5 1.5 -.1 -1.2 -.7 -2.8 -3.6 -2.4 -2.2 -2.1 -1.7 -1.7 -1.6 -1.1 -3.7 -2.9 -3.1 -4.4 -1.2 -2.7
.6 .4 .5 .1 .3 -.7 -1.4 -1.6 -.7 -.5 -.1 1.0 .9 .1 .3 .2 -.3 -1.1 -1.0 -2.5 -2.8 -2.6 -2.4 -.9 -1.0 -3.1 -3.1 -2.6 -2.7 -1.6 -1.7 -.9 -1.9 -1.5 .3 1.5
1.0 .3 .1 -.1 .3 -.4 -1.7 -1.8 .1 .4 .5 .8 .7 .5 .4 .2 -.1 -.1 -.3 -.3 -2.0 -2.9 -2.7 -3.9 -3.7 -3.4 -2.1 -2.2 .2 .4 .4 .2 .3 .9 .9 .8
.1 .0 .1 1.1 .3 1.1 .2 -.3 .1 .5 .6 1.5 1.1 1.3 .4 -.7 .4 .1 .1 -.6 .9 -1.7 -.4 1.1 .0 -.2 .1 .7 .5 1.1 1.2 .5 .7 1.3 .0
1.7 2.7 .9 .7 .7 .9 .5 .9 .5 1.1 1.5 1.5 .9 1.2 1.3 .8 1.5 1.4 .7 .6 .2 .0 -.5 -.3 1.2 1.7 .6 .3 -.5 1.1 1.1 .8 .6 1.0 1.7 1.6
.9 .9 .5 .3 .7 1.0 1.0 .6 1.0 1.6 .3 .5 .7 .9 .7 .3 .9 1.2 .8 .2 .3 -.3 .8 .3 .0 1.6 .4 -.1 -.9 -1.1 -.4 -.2 .0 1.1 1.7 1.1
1.4 1.1 .4 .0 -.1 .7 -.3 .0 1.8 3.1 .9 .6 .9 2.0 1.2 1.4 -.2 1.5 1.7 1.2 .7 1.5 1.2 .8 .7 .7 1.1 .4 .2 .9 .5 .8 .9 1.5 .8 1.4
.3 1.0 .1 .2 1.2 -.3 .4 -.3 -.1 1.2 1.2 -.4 -.4 .6 .7 -.1 1.4 3.4 1.3 -.6 .8 2.0 2.9 -2.9 .3 .9 2.5 1.0 .0 .0 -.4 3.0 2.6 1.5 .2 .4
-1.5 -.2 -.6 -.1 -1.2 .1 -.2 .5 -2.9 -2.1 -.7 .0 1.6 .2 .6 .0 -.3 -2.3 -2.2 -2.3 -3.0 -2.1 -2.6 -1.2 -.7 -3.7 -3.8 -1.6 -1.0 -2.2 .4 -1.8 -.9
-.5 -.7 -.1 1.5 1.2 .4 .6 -1.3 .1 1.0 .9 2.2 -3.5 -1.1 -1.2 .0 .0 .0 .0 -.5 -.7 -1.9 -.9 -1.1 -.9 .3 -.1 -1.0 -.8 -.9 -1.0 -2.2 -.9 .0 -.1 -.6 -.7
.9 -.8 -.5 -.5 .9 2.4 1.8 -1.0 -1.9 -2.3 -1.7 -1.5 -1.5 -1.1 -2.3 -2.8 -2.3 -2.4 -2.2 -1.2 -1.3 -1.8 -1.9 -1.7 -1.8 -2.4 -3.9 -2.8 -2.2 -1.5 -1.5 -.8
-3.4 -1.6 -2.3 -2.9 -3.9 -2.8 -4.6 -3.9 -2.5 -1.9 -1.9 -3.4 -2.5 -3.3

Figure 24. SATOB 101 - 400 hPa RMS O-B vector differences (ms-1). SEPTEMBER 2001

All observations

Values are plotted where greater than 10 obs are present


150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
6 6 7 7 6 5 7 12 6
8 8 8 8 12 7 7 6 6 7 6 7 8 8 6 6 6 7 8 7 6 7 5 6 5 5 9 7 9 8 11 8
8 6 6 5 5 5 6 5 6 6 6 8 7 7 7 6 6 6 6 8 8 7 6 5 5 6 7 7 8 8 8 9 10 10 8 7
6 6 5 5 5 5 7 6 6 6 6 6 6 6 6 5 5 5 5 5 6 7 5 6 8 7 6 6 6 6 8 8 7 7 7 7
6 5 5 5 5 6 6 6 6 5 5 5 5 6 6 5 5 5 5 4 8 5 4 4 5 5 5 5 5 7 7 7 7 7 6
6 7 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 6 5 6 5 5 5 5 6 8 7 6 6 6 6 6 6 7 6 6
5 5 6 6 6 6 5 5 5 5 5 5 5 4 4 5 6 6 5 6 5 5 5 6 7 8 6 7 6 6 5 6 5 5 6 6
6 6 5 6 6 6 7 6 6 6 5 5 5 6 5 6 7 6 6 5 6 6 5 6 7 5 6 6 5 5 5 5 5 5 5 5
6 6 6 6 7 8 5 6 7 6 6 6 6 6 6 7 7 10 8 7 6 9 13 7 7 5 7 6 6 6 6 7 6 6 7 6
8 6 7 7 6 6 6 6 7 9 8 6 9 6 7 7 7 10 8 8 8 9 8 7 8 9 9 7 9 9 9 8 7
6 7 7 8 9 7 6 7 6 5 7 5 10 7 7 7 7 8 7 7 8 7 7 6 7 7 7 7 7 6 6 6 6 6 6 6
5 5 6 7 8 7 7 6 5 9 9 9 9 9 10 9 9 9 9 8 8 8 10 9 8 7 9 8 8 7 7 5
8 7 9 10 11 10 11 9 10 10 9 9 9 9

MONITORING OF SATELLITE TEMPERATURES

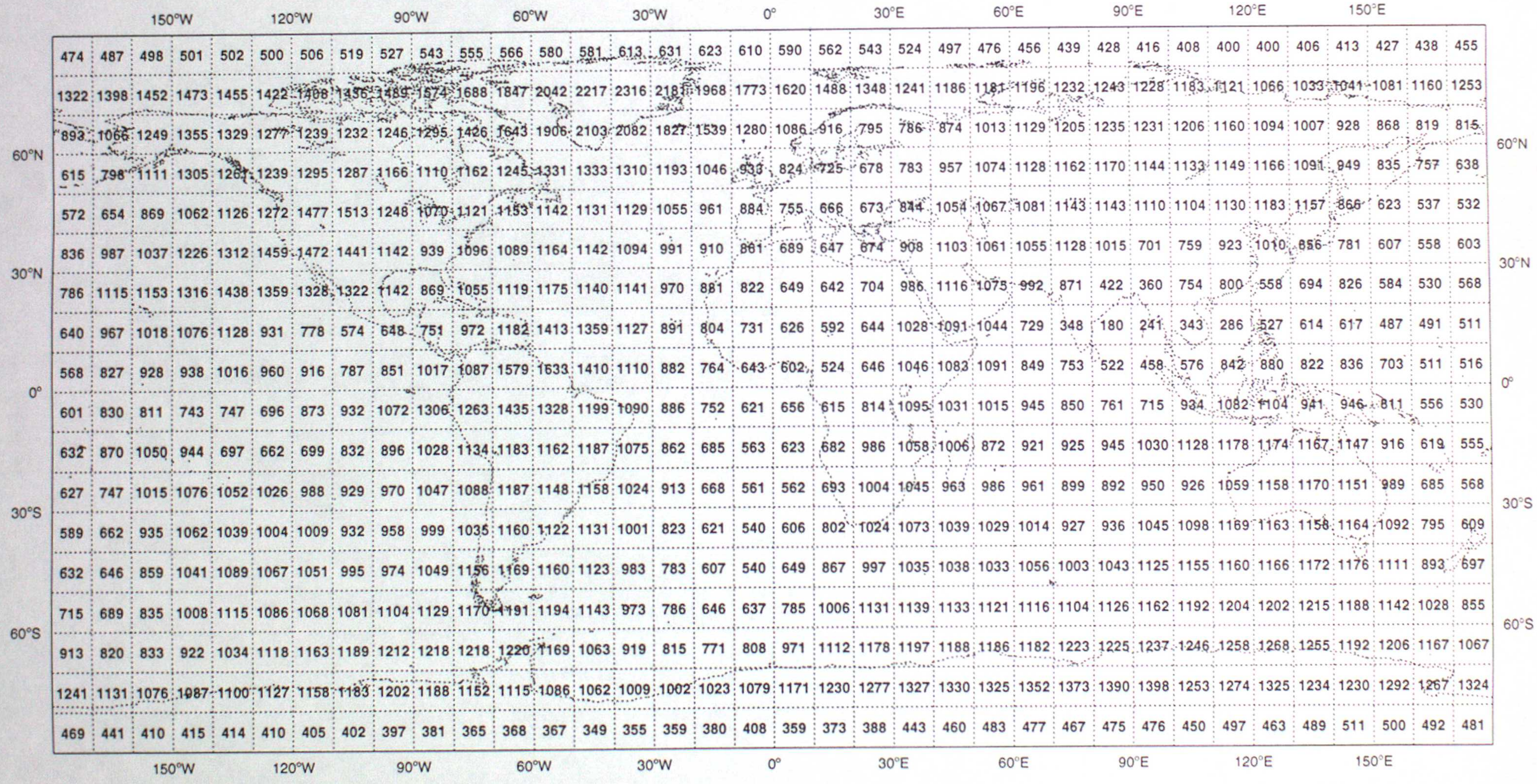
MONITORING CENTRE: BRACKNELL

MONTH: September 2001

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from NOAA-15 and NOAA-16.
Standard of comparison	:Background field from UKMO global model.
Selection Criteria	:All soundings.
Data Extracted	:Sounding channels (and approximate weighting function peaks, hPa) HIRS8 (Surface) HIRS15 (700) HIRS11 (500-700) HIRS4 (400) AMSUA5 (700) AMSUA7 (300) AMSUA9 (100) :Mean and standard deviation observation-minus-background brightness temperature differences

Figure 25. ATOVS mean daily count. SEPTEMBER 2001
NOAA15, using all observations
Global average number of observations in 24 hours = 621106

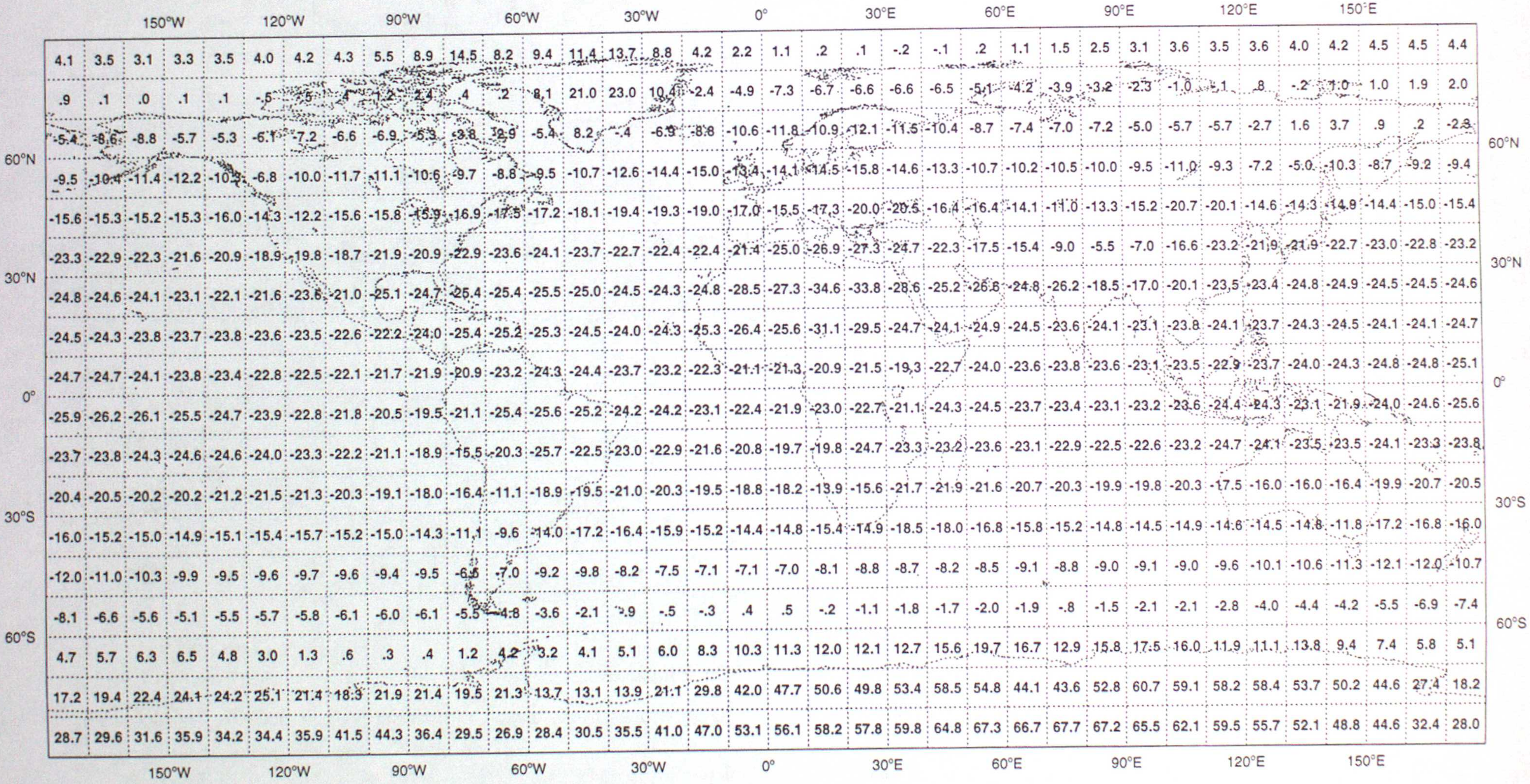


474	487	498	501	502	500	506	519	527	543	555	566	580	581	613	631	623	610	590	562	543	524	497	476	456	439	428	416	408	400	400	406	413	427	438	455
1322	1398	1452	1473	1455	1422	1408	1436	1489	1574	1688	1847	2042	2217	2316	2181	1968	1773	1620	1488	1348	1241	1186	1181	1196	1232	1243	1228	1183	1121	1066	1033	1041	1081	1160	1253
893	1066	1249	1355	1329	1277	1239	1232	1246	1295	1426	1643	1906	2103	2082	1827	1539	1280	1086	916	795	786	874	1013	1129	1205	1235	1231	1206	1160	1094	1007	928	868	819	815
615	798	1111	1305	1261	1239	1295	1287	1166	1110	1162	1245	1331	1333	1310	1193	1046	933	824	725	678	783	957	1074	1128	1162	1170	1144	1133	1149	1166	1091	949	835	757	638
572	654	869	1062	1126	1272	1477	1513	1248	1070	1121	1153	1142	1131	1129	1055	961	884	755	666	673	844	1054	1067	1081	1143	1143	1110	1104	1130	1183	1157	866	623	537	532
836	987	1037	1226	1312	1459	1472	1441	1142	939	1096	1089	1164	1142	1094	991	910	861	689	647	674	908	1103	1061	1055	1128	1015	701	759	923	1010	856	781	607	558	603
786	1115	1153	1316	1438	1359	1328	1322	1142	869	1055	1119	1175	1140	1141	970	881	822	649	642	704	986	1116	1075	992	871	422	360	754	800	558	694	826	584	530	568
640	967	1018	1076	1128	931	778	574	648	751	972	1182	1413	1359	1127	891	804	731	626	592	644	1028	1091	1044	729	348	180	241	343	286	527	614	617	487	491	511
568	827	928	938	1016	960	916	787	851	1017	1087	1579	1633	1410	1110	882	764	643	602	524	646	1046	1083	1091	849	753	522	458	576	842	880	822	836	703	511	516
601	830	811	743	747	696	873	932	1072	1306	1263	1435	1328	1199	1090	886	752	621	656	615	814	1095	1031	1015	945	850	761	715	934	1082	1104	941	946	811	556	530
632	870	1050	944	697	662	699	832	896	1028	1134	1183	1162	1187	1075	862	685	563	623	682	986	1058	1006	872	921	925	945	1030	1128	1178	1174	1167	1147	916	619	555
627	747	1015	1076	1052	1026	988	929	970	1047	1088	1187	1148	1158	1024	913	668	561	562	693	1004	1045	963	986	961	899	892	950	926	1059	1158	1170	1151	989	685	568
589	662	935	1062	1039	1004	1009	932	958	999	1035	1160	1122	1131	1001	823	621	540	606	802	1024	1073	1039	1029	1014	927	936	1045	1098	1169	1163	1158	1164	1092	795	609
632	646	859	1041	1089	1067	1051	995	974	1049	1156	1169	1160	1123	983	783	607	540	649	867	997	1035	1038	1033	1056	1003	1043	1125	1155	1160	1166	1172	1176	1111	893	697
715	689	835	1008	1115	1086	1068	1081	1104	1129	1170	1191	1194	1143	973	786	646	637	785	1006	1131	1139	1133	1121	1116	1104	1126	1162	1192	1204	1202	1215	1188	1142	1028	855
913	820	833	922	1034	1118	1163	1189	1212	1218	1218	1220	1169	1063	919	815	771	808	971	1112	1178	1197	1188	1186	1182	1223	1225	1237	1246	1258	1268	1255	1192	1206	1167	1067
1241	1131	1076	1087	1100	1127	1158	1183	1202	1188	1152	1115	1086	1062	1009	1002	1023	1079	1171	1230	1277	1327	1330	1325	1352	1373	1390	1398	1253	1274	1325	1234	1230	1292	1267	1324
469	441	410	415	414	410	405	402	397	381	365	368	367	349	355	359	380	408	359	373	388	443	460	483	477	467	475	476	450	497	463	489	511	500	492	481

Figure 26. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2001

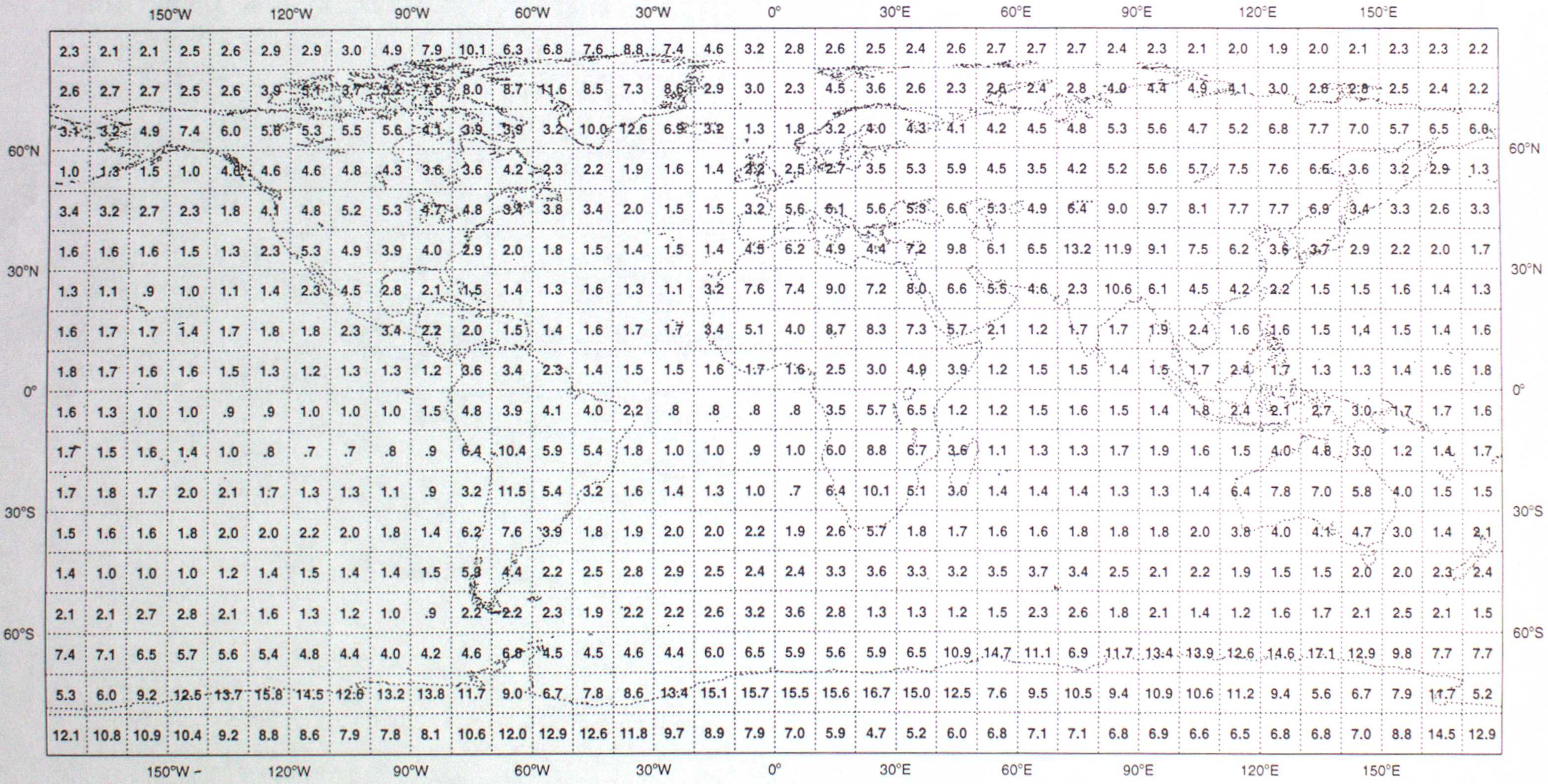
Channel: HIRS8 (Surface)

NOAA15, using all observations



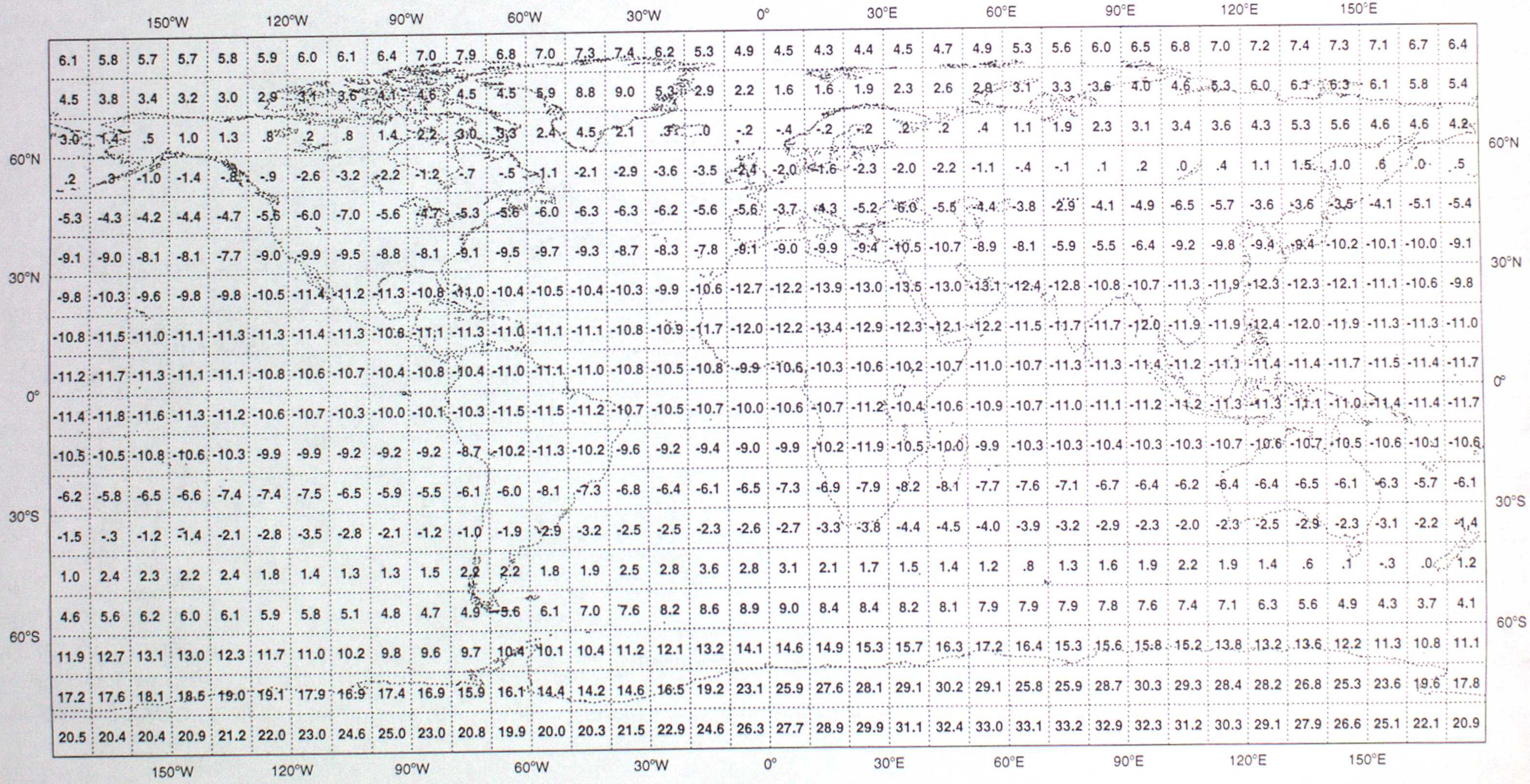
4.1	3.5	3.1	3.3	3.5	4.0	4.2	4.3	5.5	8.9	14.5	8.2	9.4	11.4	13.7	8.8	4.2	2.2	1.1	.2	.1	-.2	-.1	.2	1.1	1.5	2.5	3.1	3.6	3.5	3.6	4.0	4.2	4.5	4.5	4.4
.9	.1	.0	.1	.1	-.5	.5	.4	1.2	2.4	.4	.2	8.1	21.0	23.0	10.4	-2.4	-4.9	-7.3	-6.7	-6.6	-6.6	-6.5	-5.1	-4.2	-3.9	-3.2	-2.3	-1.0	-.1	.8	-.2	1.0	1.0	1.9	2.0
-5.4	-8.6	-8.8	-5.7	-5.3	-6.1	-7.2	-6.6	-6.9	-5.3	-3.8	-2.9	-5.4	8.2	-.4	-6.9	-8.8	-10.6	-11.8	-10.9	-12.1	-11.5	-10.4	-8.7	-7.4	-7.0	-7.2	-5.0	-5.7	-5.7	-2.7	1.6	3.7	.9	.2	-2.3
-9.5	-10.4	-11.4	-12.2	-10.3	-6.8	-10.0	-11.7	-11.1	-10.6	-9.7	-8.8	-9.5	-10.7	-12.6	-14.4	-15.0	-13.4	-14.1	-14.5	-15.8	-14.6	-13.3	-10.7	-10.2	-10.5	-10.0	-9.5	-11.0	-9.3	-7.2	-5.0	-10.3	-8.7	-9.2	-9.4
-15.6	-15.3	-15.2	-15.3	-16.0	-14.3	-12.2	-15.6	-15.8	-15.9	-16.9	-17.5	-17.2	-18.1	-19.4	-19.3	-19.0	-17.0	-15.5	-17.3	-20.0	-20.5	-16.4	-16.4	-14.1	-11.0	-13.3	-15.2	-20.7	-20.1	-14.6	-14.3	-14.9	-14.4	-15.0	-15.4
-23.3	-22.9	-22.3	-21.6	-20.9	-18.9	-19.8	-18.7	-21.9	-20.9	-22.9	-23.6	-24.1	-23.7	-22.7	-22.4	-22.4	-21.4	-25.0	-26.9	-27.3	-24.7	-22.3	-17.5	-15.4	-9.0	-5.5	-7.0	-16.6	-23.2	-21.9	-21.9	-22.7	-23.0	-22.8	-23.2
-24.8	-24.6	-24.1	-23.1	-22.1	-21.6	-23.6	-21.0	-25.1	-24.7	-25.4	-25.4	-25.5	-25.0	-24.5	-24.3	-24.8	-28.5	-27.3	-34.6	-33.8	-28.6	-25.2	-26.6	-24.8	-26.2	-18.5	-17.0	-20.1	-23.5	-23.4	-24.8	-24.9	-24.5	-24.5	-24.6
-24.5	-24.3	-23.8	-23.7	-23.8	-23.6	-23.5	-22.6	-22.2	-24.0	-25.4	-25.2	-25.3	-24.5	-24.0	-24.3	-25.3	-26.4	-25.6	-31.1	-29.5	-24.7	-24.1	-24.9	-24.5	-23.6	-24.1	-23.1	-23.8	-24.1	-23.7	-24.3	-24.5	-24.1	-24.1	-24.7
-24.7	-24.7	-24.1	-23.8	-23.4	-22.8	-22.5	-22.1	-21.7	-21.9	-20.9	-23.2	-24.3	-24.4	-23.7	-23.2	-22.3	-21.1	-21.3	-20.9	-21.5	-19.3	-22.7	-24.0	-23.6	-23.8	-23.6	-23.1	-23.5	-22.9	-23.7	-24.0	-24.3	-24.8	-24.8	-25.1
-25.9	-26.2	-26.1	-25.5	-24.7	-23.9	-22.8	-21.8	-20.5	-19.5	-21.1	-25.4	-25.6	-25.2	-24.2	-24.2	-23.1	-22.4	-21.9	-23.0	-22.7	-21.1	-24.3	-24.5	-23.7	-23.4	-23.1	-23.2	-23.6	-24.4	-24.3	-23.1	-21.9	-24.0	-24.6	-25.6
-23.7	-23.8	-24.3	-24.6	-24.6	-24.0	-23.3	-22.2	-21.1	-18.9	-15.5	-20.3	-25.7	-22.5	-23.0	-22.9	-21.6	-20.8	-19.7	-19.8	-24.7	-23.3	-23.2	-23.6	-23.1	-22.9	-22.5	-22.6	-23.2	-24.7	-24.1	-23.5	-23.5	-24.1	-23.3	-23.8
-20.4	-20.5	-20.2	-20.2	-21.2	-21.5	-21.3	-20.3	-19.1	-18.0	-16.4	-11.1	-18.9	-19.5	-21.0	-20.3	-19.5	-18.8	-18.2	-13.9	-15.6	-21.7	-21.9	-21.6	-20.7	-20.3	-19.9	-19.8	-20.3	-17.5	-16.0	-16.0	-16.4	-19.9	-20.7	-20.5
-16.0	-15.2	-15.0	-14.9	-15.1	-15.4	-15.7	-15.2	-15.0	-14.3	-11.1	-9.6	-14.0	-17.2	-16.4	-15.9	-15.2	-14.4	-14.8	-15.4	-14.9	-18.5	-18.0	-16.8	-15.8	-15.2	-14.8	-14.5	-14.9	-14.6	-14.5	-14.8	-11.8	-17.2	-16.8	-16.0
-12.0	-11.0	-10.3	-9.9	-9.5	-9.6	-9.7	-9.6	-9.4	-9.5	-6.5	-7.0	-9.2	-9.8	-8.2	-7.5	-7.1	-7.1	-7.0	-8.1	-8.8	-8.7	-8.2	-8.5	-9.1	-8.8	-9.0	-9.1	-9.0	-9.6	-10.1	-10.6	-11.3	-12.1	-12.0	-10.7
-8.1	-6.6	-5.6	-5.1	-5.5	-5.7	-5.8	-6.1	-6.0	-6.1	-5.5	-4.8	-3.6	-2.1	-.9	-.5	-.3	.4	.5	-.2	-1.1	-1.8	-1.7	-2.0	-1.9	-.8	-1.5	-2.1	-2.1	-2.8	-4.0	-4.4	-4.2	-5.5	-6.9	-7.4
4.7	5.7	6.3	6.5	4.8	3.0	1.3	.6	.3	.4	1.2	4.2	3.2	4.1	5.1	6.0	8.3	10.3	11.3	12.0	12.1	12.7	15.6	19.7	16.7	12.9	15.8	17.5	16.0	11.9	11.1	13.8	9.4	7.4	5.8	5.1
17.2	19.4	22.4	24.1	24.2	25.1	21.4	18.3	21.9	21.4	19.5	21.3	13.7	13.1	13.9	21.1	29.8	42.0	47.7	50.6	49.8	53.4	58.5	54.8	44.1	43.6	52.8	60.7	59.1	58.2	58.4	53.7	50.2	44.6	27.4	18.2
28.7	29.6	31.6	35.9	34.2	34.4	35.9	41.5	44.3	36.4	29.5	26.9	28.4	30.5	35.5	41.0	47.0	53.1	56.1	58.2	57.8	59.8	64.8	67.3	66.7	67.7	67.2	65.5	62.1	59.5	55.7	52.1	48.8	44.6	32.4	28.0

Figure 27. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2001
Channel: HIRS8 (Surface)
NOAA15, using all observations



2.3	2.1	2.1	2.5	2.6	2.9	2.9	3.0	4.9	7.9	10.1	6.3	6.8	7.6	8.8	7.4	4.6	3.2	2.8	2.6	2.5	2.4	2.6	2.7	2.7	2.7	2.4	2.3	2.1	2.0	1.9	2.0	2.1	2.3	2.3	2.2
2.6	2.7	2.7	2.5	2.6	3.9	5.1	3.7	5.2	7.6	8.0	8.7	11.6	8.5	7.3	8.6	2.9	3.0	2.3	4.5	3.6	2.6	2.3	2.6	2.4	2.8	4.0	4.4	4.9	4.1	3.0	2.6	2.8	2.5	2.4	2.2
3.1	3.2	4.9	7.4	6.0	5.8	5.3	5.5	5.6	4.1	3.9	3.9	3.2	10.0	12.6	6.9	3.2	1.3	1.8	3.2	4.0	4.3	4.1	4.2	4.5	4.8	5.3	5.6	4.7	5.2	6.8	7.7	7.0	5.7	6.5	6.8
1.0	1.3	1.5	1.0	4.6	4.6	4.6	4.8	4.3	3.6	3.6	4.2	2.3	2.2	1.9	1.6	1.4	2.2	2.5	2.7	3.5	5.3	5.9	4.5	3.5	4.2	5.2	5.6	5.7	7.5	7.6	6.6	3.6	3.2	2.9	1.3
3.4	3.2	2.7	2.3	1.8	4.1	4.8	5.2	5.3	4.7	4.8	3.4	3.8	3.4	2.0	1.5	1.5	3.2	5.6	6.1	5.6	5.3	6.6	5.3	4.9	6.4	9.0	9.7	8.1	7.7	7.7	6.9	3.4	3.3	2.6	3.3
1.6	1.6	1.6	1.5	1.3	2.3	5.3	4.9	3.9	4.0	2.9	2.0	1.8	1.5	1.4	1.5	1.4	4.5	6.2	4.9	4.4	7.2	9.8	6.1	6.5	13.2	11.9	9.1	7.5	6.2	3.6	3.7	2.9	2.2	2.0	1.7
1.3	1.1	.9	1.0	1.1	1.4	2.3	4.5	2.8	2.1	1.5	1.4	1.3	1.6	1.3	1.1	3.2	7.6	7.4	9.0	7.2	8.0	6.6	5.5	4.6	2.3	10.6	6.1	4.5	4.2	2.2	1.5	1.5	1.6	1.4	1.3
1.6	1.7	1.7	1.4	1.7	1.8	1.8	2.3	3.4	2.2	2.0	1.5	1.4	1.6	1.7	1.7	3.4	5.1	4.0	8.7	8.3	7.3	5.7	2.1	1.2	1.7	1.7	1.9	2.4	1.6	1.6	1.5	1.4	1.5	1.4	1.6
1.8	1.7	1.6	1.6	1.5	1.3	1.2	1.3	1.3	1.2	3.6	3.4	2.3	1.4	1.5	1.5	1.6	1.7	1.6	2.5	3.0	4.9	3.9	1.2	1.5	1.5	1.4	1.5	1.7	2.4	1.7	1.3	1.3	1.4	1.6	1.8
1.6	1.3	1.0	1.0	.9	.9	1.0	1.0	1.0	1.5	4.8	3.9	4.1	4.0	2.2	.8	.8	.8	.8	3.5	5.7	6.5	1.2	1.2	1.5	1.6	1.5	1.4	1.8	2.4	2.1	2.7	3.0	1.7	1.7	1.6
1.7	1.5	1.6	1.4	1.0	.8	.7	.7	.8	.9	6.4	10.4	5.9	5.4	1.8	1.0	1.0	.9	1.0	6.0	8.8	6.7	3.6	1.1	1.3	1.3	1.7	1.9	1.6	1.5	4.0	4.8	3.0	1.2	1.4	1.7
1.7	1.8	1.7	2.0	2.1	1.7	1.3	1.3	1.1	.9	3.2	11.5	5.4	3.2	1.6	1.4	1.3	1.0	.7	6.4	10.1	5.1	3.0	1.4	1.4	1.4	1.3	1.3	1.4	6.4	7.8	7.0	5.8	4.0	1.5	1.5
1.5	1.6	1.6	1.8	2.0	2.0	2.2	2.0	1.8	1.4	6.2	7.6	3.9	1.8	1.9	2.0	2.0	2.2	1.9	2.6	5.7	1.8	1.7	1.6	1.6	1.8	1.8	1.8	2.0	3.8	4.0	4.1	4.7	3.0	1.4	2.1
1.4	1.0	1.0	1.0	1.2	1.4	1.5	1.4	1.4	1.5	5.8	4.4	2.2	2.5	2.8	2.9	2.5	2.4	2.4	3.3	3.6	3.3	3.2	3.5	3.7	3.4	2.5	2.1	2.2	1.9	1.5	1.5	2.0	2.0	2.3	2.4
2.1	2.1	2.7	2.8	2.1	1.6	1.3	1.2	1.0	.9	2.2	2.2	2.3	1.9	2.2	2.2	2.6	3.2	3.6	2.8	1.3	1.3	1.2	1.5	2.3	2.6	1.8	2.1	1.4	1.2	1.6	1.7	2.1	2.5	2.1	1.5
7.4	7.1	6.5	5.7	5.6	5.4	4.8	4.4	4.0	4.2	4.6	6.8	4.5	4.5	4.6	4.4	6.0	6.5	5.9	5.6	5.9	6.5	10.9	14.7	11.1	6.9	11.7	13.4	13.9	12.6	14.6	17.1	12.9	9.8	7.7	7.7
5.3	6.0	9.2	12.5	13.7	15.8	14.5	12.6	13.2	13.8	11.7	9.0	6.7	7.8	8.6	13.4	15.1	15.7	15.5	15.6	16.7	15.0	12.5	7.6	9.5	10.5	9.4	10.9	10.6	11.2	9.4	5.6	6.7	7.9	11.7	5.2
12.1	10.8	10.9	10.4	9.2	8.8	8.6	7.9	7.8	8.1	10.6	12.0	12.9	12.6	11.8	9.7	8.9	7.9	7.0	5.9	4.7	5.2	6.0	6.8	7.1	7.1	6.8	6.9	6.6	6.5	6.8	6.8	7.0	8.8	14.5	12.9

Figure 28. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2001
Channel: HIRS15 (700 hPa)
NOAA15, using all observations

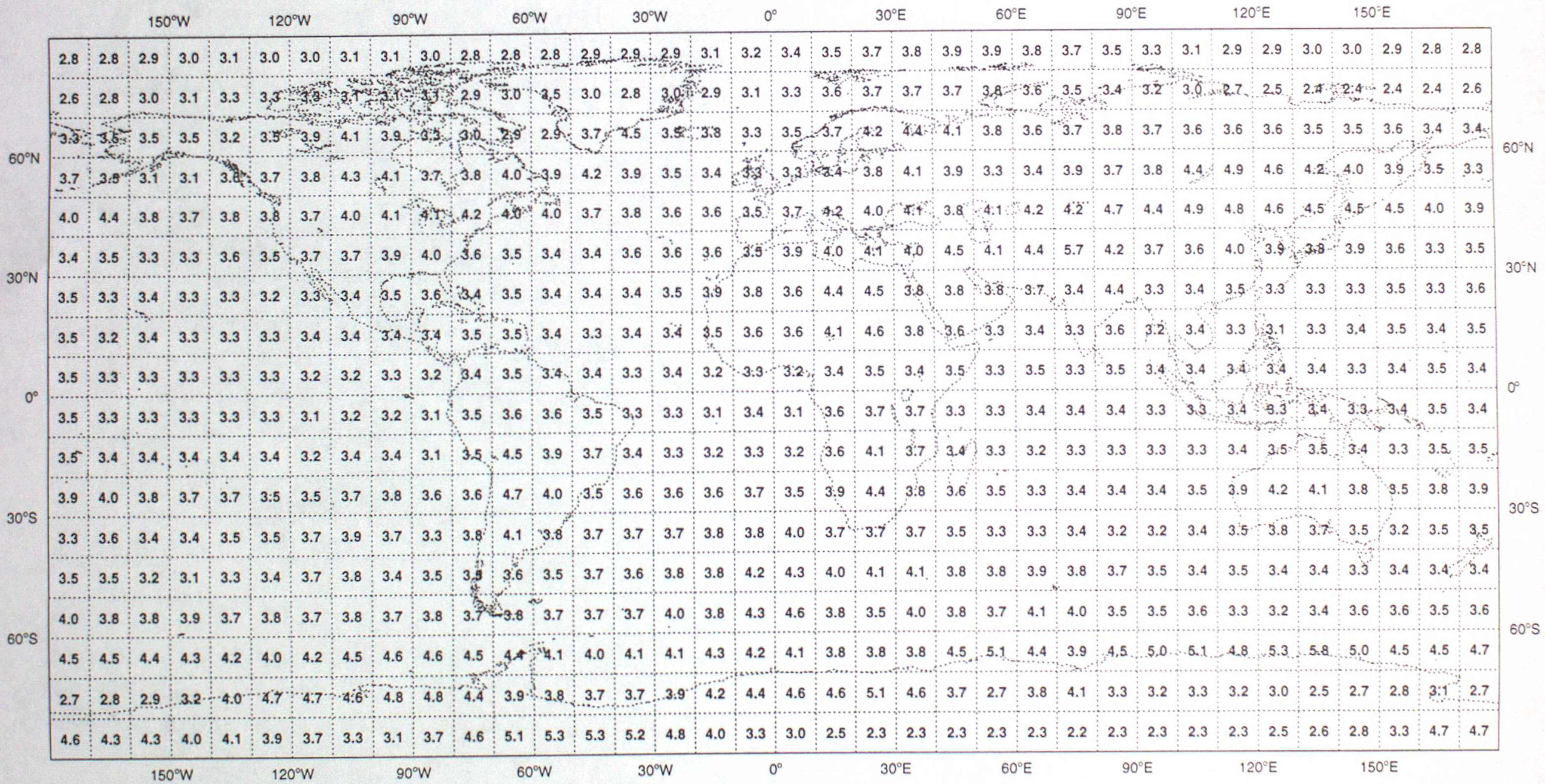


6.1	5.8	5.7	5.7	5.8	5.9	6.0	6.1	6.4	7.0	7.9	6.8	7.0	7.3	7.4	6.2	5.3	4.9	4.5	4.3	4.4	4.5	4.7	4.9	5.3	5.6	6.0	6.5	6.8	7.0	7.2	7.4	7.3	7.1	6.7	6.4
4.5	3.8	3.4	3.2	3.0	2.9	3.1	3.6	4.1	4.6	4.5	4.5	5.9	8.8	9.0	5.3	2.9	2.2	1.6	1.6	1.9	2.3	2.6	2.8	3.1	3.3	3.6	4.0	4.6	5.3	6.0	6.1	6.3	6.1	5.8	5.4
3.0	1.4	.5	1.0	1.3	.8	.2	.8	1.4	2.2	3.0	3.3	2.4	4.5	2.1	.3	.0	-.2	-.4	-.2	-.2	.2	.2	.4	1.1	1.9	2.3	3.1	3.4	3.6	4.3	5.3	5.6	4.6	4.6	4.2
.2	-.3	-1.0	-1.4	-.8	-.9	-2.6	-3.2	-2.2	-1.2	-.7	-.5	-1.1	-2.1	-2.9	-3.6	-3.5	-2.4	-2.0	-1.6	-2.3	-2.0	-2.2	-1.1	-.4	-.1	.1	.2	.0	.4	1.1	1.5	1.0	.6	.0	.5
-5.3	-4.3	-4.2	-4.4	-4.7	-5.6	-6.0	-7.0	-5.6	-4.7	-5.3	-5.6	-6.0	-6.3	-6.3	-6.2	-5.6	-5.6	-3.7	-4.3	-5.2	-6.0	-5.5	-4.4	-3.8	-2.9	-4.1	-4.9	-6.5	-5.7	-3.6	-3.6	-3.5	-4.1	-5.1	-5.4
-9.1	-9.0	-8.1	-8.1	-7.7	-9.0	-9.9	-9.5	-8.8	-8.1	-9.1	-9.5	-9.7	-9.3	-8.7	-8.3	-7.8	-9.1	-9.0	-9.9	-9.4	-10.5	-10.7	-8.9	-8.1	-5.9	-5.5	-6.4	-9.2	-9.8	-9.4	-9.4	-10.2	-10.1	-10.0	-9.1
-9.8	-10.3	-9.6	-9.8	-9.8	-10.5	-11.4	-11.2	-11.3	-10.8	-11.0	-10.4	-10.5	-10.4	-10.3	-9.9	-10.6	-12.7	-12.2	-13.9	-13.0	-13.5	-13.0	-13.1	-12.4	-12.8	-10.8	-10.7	-11.3	-11.9	-12.3	-12.3	-12.1	-11.1	-10.6	-9.8
-10.8	-11.5	-11.0	-11.1	-11.3	-11.3	-11.4	-11.3	-10.8	-11.1	-11.3	-11.0	-11.1	-11.1	-10.8	-10.9	-11.7	-12.0	-12.2	-13.4	-12.9	-12.3	-12.1	-12.2	-11.5	-11.7	-11.7	-12.0	-11.9	-11.9	-12.4	-12.0	-11.9	-11.3	-11.3	-11.0
-11.2	-11.7	-11.3	-11.1	-11.1	-10.8	-10.6	-10.7	-10.4	-10.8	-10.4	-11.0	-11.1	-11.0	-10.8	-10.5	-10.8	-9.9	-10.6	-10.3	-10.6	-10.2	-10.7	-11.0	-10.7	-11.3	-11.3	-11.4	-11.2	-11.1	-11.4	-11.4	-11.7	-11.5	-11.4	-11.7
-11.4	-11.8	-11.6	-11.3	-11.2	-10.6	-10.7	-10.3	-10.0	-10.1	-10.3	-11.5	-11.5	-11.2	-10.7	-10.5	-10.7	-10.0	-10.6	-10.7	-11.2	-10.4	-10.6	-10.9	-10.7	-11.0	-11.1	-11.2	-11.2	-11.3	-11.3	-11.1	-11.0	-11.4	-11.4	-11.7
-10.5	-10.5	-10.8	-10.6	-10.3	-9.9	-9.9	-9.2	-9.2	-9.2	-8.7	-10.2	-11.3	-10.2	-9.6	-9.2	-9.4	-9.0	-9.9	-10.2	-11.9	-10.5	-10.0	-9.9	-10.3	-10.3	-10.4	-10.3	-10.3	-10.7	-10.6	-10.7	-10.5	-10.6	-10.1	-10.6
-6.2	-5.8	-6.5	-6.6	-7.4	-7.4	-7.5	-6.5	-5.9	-5.5	-6.1	-6.0	-8.1	-7.3	-6.8	-6.4	-6.1	-6.5	-7.3	-6.9	-7.9	-8.2	-8.1	-7.7	-7.6	-7.1	-6.7	-6.4	-6.2	-6.4	-6.4	-6.5	-6.1	-6.3	-5.7	-6.1
-1.5	-.3	-1.2	-1.4	-2.1	-2.8	-3.5	-2.8	-2.1	-1.2	-1.0	-1.9	-2.9	-3.2	-2.5	-2.5	-2.3	-2.6	-2.7	-3.3	-3.8	-4.4	-4.5	-4.0	-3.9	-3.2	-2.9	-2.3	-2.0	-2.3	-2.5	-2.9	-2.3	-3.1	-2.2	-1.4
1.0	2.4	2.3	2.2	2.4	1.8	1.4	1.3	1.3	1.5	2.2	2.2	1.8	1.9	2.5	2.8	3.6	2.8	3.1	2.1	1.7	1.5	1.4	1.2	.8	1.3	1.6	1.9	2.2	1.9	1.4	.6	.1	-.3	.0	1.2
4.6	5.6	6.2	6.0	6.1	5.9	5.8	5.1	4.8	4.7	4.9	5.6	6.1	7.0	7.6	8.2	8.6	8.9	9.0	8.4	8.4	8.2	8.1	7.9	7.9	7.9	7.8	7.6	7.4	7.1	6.3	5.6	4.9	4.3	3.7	4.1
11.9	12.7	13.1	13.0	12.3	11.7	11.0	10.2	9.8	9.6	9.7	10.4	10.1	10.4	11.2	12.1	13.2	14.1	14.6	14.9	15.3	15.7	16.3	17.2	16.4	15.3	15.6	15.8	15.2	13.8	13.2	13.6	12.2	11.3	10.8	11.1
17.2	17.6	18.1	18.5	19.0	19.1	17.9	16.9	17.4	16.9	15.9	16.1	14.4	14.2	14.6	16.5	19.2	23.1	25.9	27.6	28.1	29.1	30.2	29.1	25.8	25.9	28.7	30.3	29.3	28.4	28.2	26.8	25.3	23.6	19.6	17.8
20.5	20.4	20.4	20.9	21.2	22.0	23.0	24.6	25.0	23.0	20.8	19.9	20.0	20.3	21.5	22.9	24.6	26.3	27.7	28.9	29.9	31.1	32.4	33.0	33.1	33.2	32.9	32.3	31.2	30.3	29.1	27.9	26.6	25.1	22.1	20.9

Figure 29. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2001

Channel: HIRS15 (700 hPa)

NOAA15, using all observations

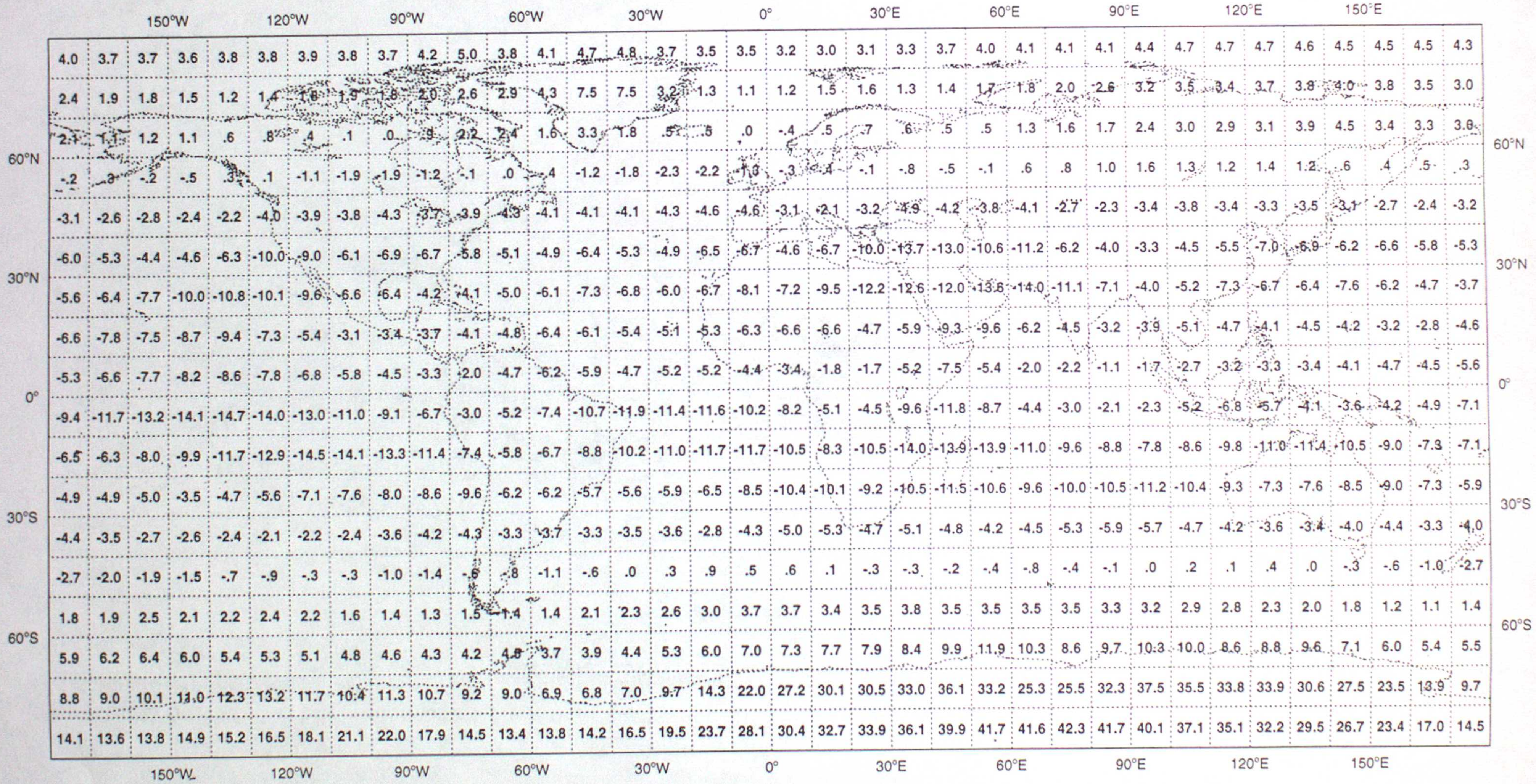


2.8	2.8	2.9	3.0	3.1	3.0	3.0	3.1	3.1	3.0	2.8	2.8	2.8	2.9	2.9	2.9	3.1	3.2	3.4	3.5	3.7	3.8	3.9	3.9	3.8	3.7	3.5	3.3	3.1	2.9	2.9	3.0	3.0	2.9	2.8	2.8
2.6	2.8	3.0	3.1	3.3	3.3	3.3	3.1	3.1	3.1	2.9	3.0	3.5	3.0	2.8	3.0	2.9	3.1	3.3	3.6	3.7	3.7	3.7	3.8	3.6	3.5	3.4	3.2	3.0	2.7	2.5	2.4	2.4	2.4	2.4	2.6
3.3	3.5	3.5	3.5	3.2	3.5	3.9	4.1	3.9	3.3	3.0	2.9	2.9	3.7	4.5	3.5	3.8	3.3	3.5	3.7	4.2	4.4	4.1	3.8	3.6	3.7	3.8	3.7	3.6	3.6	3.6	3.5	3.5	3.6	3.4	3.4
3.7	3.8	3.1	3.1	3.8	3.7	3.8	4.3	4.1	3.7	3.8	4.0	3.9	4.2	3.9	3.5	3.4	3.3	3.3	3.4	3.8	4.1	3.9	3.3	3.4	3.9	3.7	3.8	4.4	4.9	4.6	4.2	4.0	3.9	3.5	3.3
4.0	4.4	3.8	3.7	3.8	3.8	3.7	4.0	4.1	4.1	4.2	4.0	4.0	3.7	3.8	3.6	3.6	3.5	3.7	4.2	4.0	4.1	3.8	4.1	4.2	4.2	4.7	4.4	4.9	4.8	4.6	4.5	4.5	4.5	4.0	3.9
3.4	3.5	3.3	3.3	3.6	3.5	3.7	3.7	3.9	4.0	3.6	3.5	3.4	3.4	3.6	3.6	3.6	3.5	3.9	4.0	4.1	4.0	4.5	4.1	4.4	5.7	4.2	3.7	3.6	4.0	3.9	3.8	3.9	3.6	3.3	3.5
3.5	3.3	3.4	3.3	3.3	3.2	3.3	3.4	3.5	3.6	3.4	3.5	3.4	3.4	3.4	3.5	3.9	3.8	3.6	4.4	4.5	3.8	3.8	3.8	3.7	3.4	4.4	3.3	3.4	3.5	3.3	3.3	3.3	3.5	3.3	3.6
3.5	3.2	3.4	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.5	3.5	3.4	3.3	3.4	3.4	3.5	3.6	3.6	4.1	4.6	3.8	3.6	3.3	3.4	3.3	3.6	3.2	3.4	3.3	3.1	3.3	3.4	3.5	3.4	3.5
3.5	3.3	3.3	3.3	3.3	3.3	3.2	3.2	3.3	3.2	3.4	3.5	3.4	3.4	3.3	3.4	3.2	3.3	3.2	3.4	3.5	3.4	3.5	3.3	3.5	3.3	3.5	3.4	3.4	3.4	3.4	3.4	3.3	3.4	3.5	3.4
3.5	3.3	3.3	3.3	3.3	3.3	3.1	3.2	3.2	3.1	3.5	3.6	3.6	3.5	3.3	3.3	3.1	3.4	3.1	3.6	3.7	3.7	3.3	3.3	3.4	3.4	3.4	3.3	3.3	3.4	3.3	3.4	3.3	3.4	3.5	3.4
3.5	3.4	3.4	3.4	3.4	3.4	3.2	3.4	3.4	3.1	3.5	4.5	3.9	3.7	3.4	3.3	3.2	3.3	3.2	3.6	4.1	3.7	3.4	3.3	3.2	3.3	3.3	3.3	3.3	3.4	3.5	3.5	3.4	3.3	3.5	3.5
3.9	4.0	3.8	3.7	3.7	3.5	3.5	3.7	3.8	3.6	3.6	4.7	4.0	3.5	3.6	3.6	3.6	3.7	3.5	3.9	4.4	3.8	3.6	3.5	3.3	3.4	3.4	3.4	3.5	3.9	4.2	4.1	3.8	3.5	3.8	3.9
3.3	3.6	3.4	3.4	3.5	3.5	3.7	3.9	3.7	3.3	3.8	4.1	3.8	3.7	3.7	3.7	3.8	3.8	4.0	3.7	3.7	3.7	3.5	3.3	3.3	3.4	3.2	3.2	3.4	3.5	3.8	3.7	3.5	3.2	3.5	3.5
3.5	3.5	3.2	3.1	3.3	3.4	3.7	3.8	3.4	3.5	3.5	3.6	3.5	3.7	3.6	3.8	3.8	4.2	4.3	4.0	4.1	4.1	3.8	3.8	3.9	3.8	3.7	3.5	3.4	3.5	3.4	3.4	3.3	3.4	3.4	3.4
4.0	3.8	3.8	3.9	3.7	3.8	3.7	3.8	3.7	3.8	3.7	3.8	3.7	3.7	3.7	4.0	3.8	4.3	4.6	3.8	3.5	4.0	3.8	3.7	4.1	4.0	3.5	3.5	3.6	3.3	3.2	3.4	3.6	3.6	3.5	3.6
4.5	4.5	4.4	4.3	4.2	4.0	4.2	4.5	4.6	4.6	4.5	4.4	4.1	4.0	4.1	4.1	4.3	4.2	4.1	3.8	3.8	3.8	4.5	5.1	4.4	3.9	4.5	5.0	5.1	4.8	5.3	5.8	5.0	4.5	4.5	4.7
2.7	2.8	2.9	3.2	4.0	4.7	4.7	4.6	4.8	4.8	4.4	3.9	3.8	3.7	3.7	3.9	4.2	4.4	4.6	4.6	5.1	4.6	3.7	2.7	3.8	4.1	3.3	3.2	3.3	3.2	3.0	2.5	2.7	2.8	3.1	2.7
4.6	4.3	4.3	4.0	4.1	3.9	3.7	3.3	3.1	3.7	4.6	5.1	5.3	5.3	5.2	4.8	4.0	3.3	3.0	2.5	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.5	2.6	2.8	3.3	4.7	4.7

Figure 30. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2001

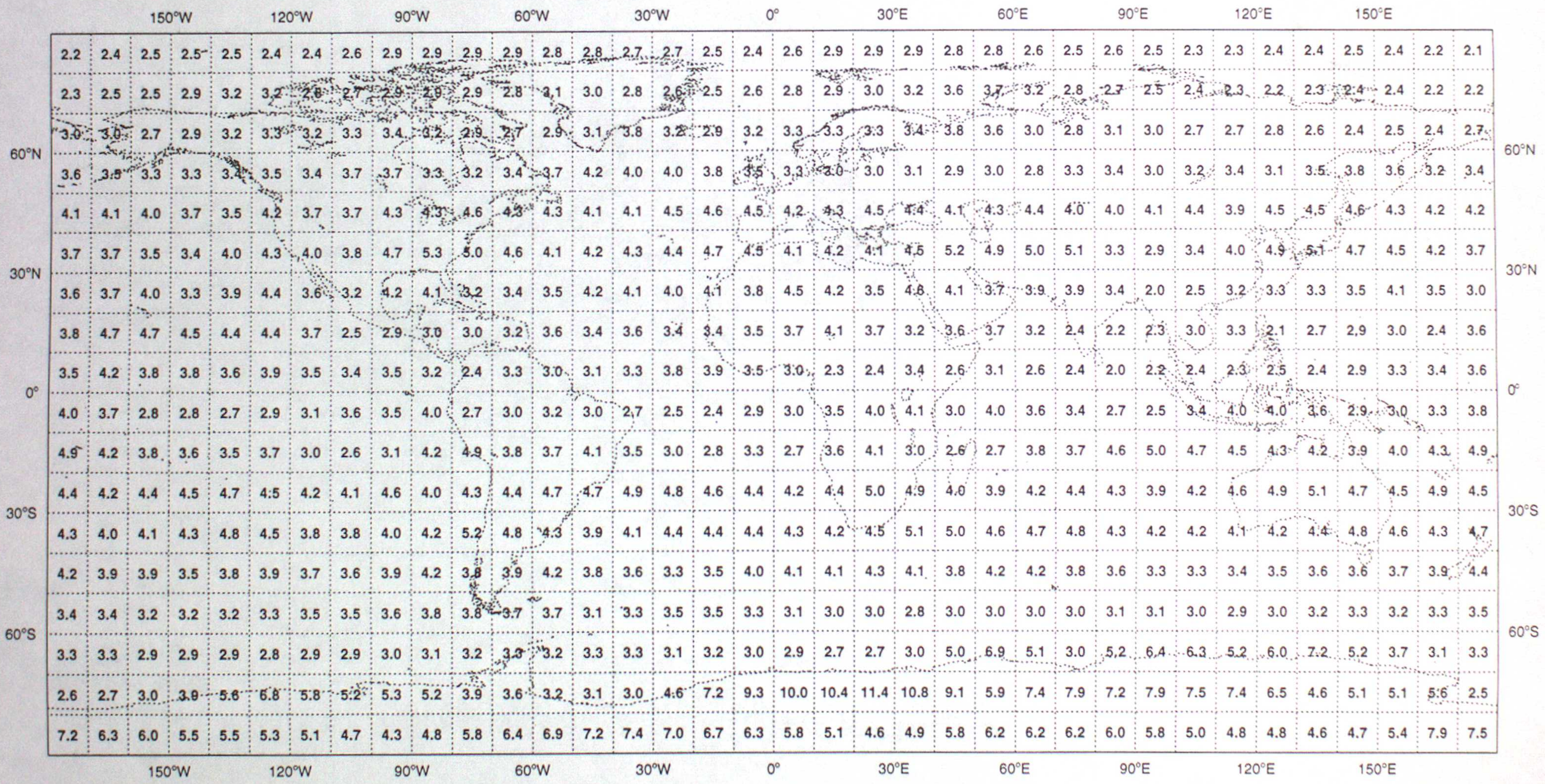
Channel: HIRS11 (500 - 700 hPa)

NOAA15, using all observations



4.0	3.7	3.7	3.6	3.8	3.8	3.9	3.8	3.7	4.2	5.0	3.8	4.1	4.7	4.8	3.7	3.5	3.5	3.2	3.0	3.1	3.3	3.7	4.0	4.1	4.1	4.1	4.4	4.7	4.7	4.7	4.6	4.5	4.5	4.5	4.3
2.4	1.9	1.8	1.5	1.2	1.4	1.6	1.9	1.8	2.0	2.6	2.9	4.3	7.5	7.5	3.2	1.3	1.1	1.2	1.5	1.6	1.3	1.4	1.7	1.8	2.0	2.6	3.2	3.5	3.4	3.7	3.8	4.0	3.8	3.5	3.0
2.1	1.1	1.2	1.1	.6	.8	.4	.1	.0	.9	2.2	2.4	1.6	3.3	1.8	.5	.5	.0	-.4	.5	.7	.6	.5	.5	1.3	1.6	1.7	2.4	3.0	2.9	3.1	3.9	4.5	3.4	3.3	3.6
-.2	.3	-.2	-.5	.3	.1	-1.1	-1.9	-1.9	-1.2	-.1	.0	.4	-1.2	-1.8	-2.3	-2.2	-1.3	-.3	-.4	-.1	-.8	-.5	-.1	.6	.8	1.0	1.6	1.3	1.2	1.4	1.2	.6	.4	.5	.3
-3.1	-2.6	-2.8	-2.4	-2.2	-4.0	-3.9	-3.8	-4.3	-3.7	-3.9	-4.3	-4.1	-4.1	-4.1	-4.3	-4.6	-4.6	-3.1	-2.1	-3.2	-4.9	-4.2	-3.8	-4.1	-2.7	-2.3	-3.4	-3.8	-3.4	-3.3	-3.5	-3.1	-2.7	-2.4	-3.2
-6.0	-5.3	-4.4	-4.6	-6.3	-10.0	-9.0	-6.1	-6.9	-6.7	-5.8	-5.1	-4.9	-6.4	-5.3	-4.9	-6.5	-6.7	-4.6	-6.7	-10.0	-13.7	-13.0	-10.6	-11.2	-6.2	-4.0	-3.3	-4.5	-5.5	-7.0	-6.9	-6.2	-6.6	-5.8	-5.3
-5.6	-6.4	-7.7	-10.0	-10.8	-10.1	-9.6	-6.6	-6.4	-4.2	-4.1	-5.0	-6.1	-7.3	-6.8	-6.0	-6.7	-8.1	-7.2	-9.5	-12.2	-12.6	-12.0	-13.6	-14.0	-11.1	-7.1	-4.0	-5.2	-7.3	-6.7	-6.4	-7.6	-6.2	-4.7	-3.7
-6.6	-7.8	-7.5	-8.7	-9.4	-7.3	-5.4	-3.1	-3.4	-3.7	-4.1	-4.8	-6.4	-6.1	-5.4	-5.1	-5.3	-6.3	-6.6	-6.6	-4.7	-5.9	-9.3	-9.6	-6.2	-4.5	-3.2	-3.9	-5.1	-4.7	-4.1	-4.5	-4.2	-3.2	-2.8	-4.6
-5.3	-6.6	-7.7	-8.2	-8.6	-7.8	-6.8	-5.8	-4.5	-3.3	-2.0	-4.7	-6.2	-5.9	-4.7	-5.2	-5.2	-4.4	-3.4	-1.8	-1.7	-5.2	-7.5	-5.4	-2.0	-2.2	-1.1	-1.7	-2.7	-3.2	-3.3	-3.4	-4.1	-4.7	-4.5	-5.6
-9.4	-11.7	-13.2	-14.1	-14.7	-14.0	-13.0	-11.0	-9.1	-6.7	-3.0	-5.2	-7.4	-10.7	-11.9	-11.4	-11.6	-10.2	-8.2	-5.1	-4.5	-9.6	-11.8	-8.7	-4.4	-3.0	-2.1	-2.3	-5.2	-6.8	-5.7	-4.1	-3.6	-4.2	-4.9	-7.1
-6.5	-6.3	-8.0	-9.9	-11.7	-12.9	-14.5	-14.1	-13.3	-11.4	-7.4	-5.8	-6.7	-8.8	-10.2	-11.0	-11.7	-11.7	-10.5	-8.3	-10.5	-14.0	-13.9	-13.9	-11.0	-9.6	-8.8	-7.8	-8.6	-9.8	-11.0	-11.4	-10.5	-9.0	-7.3	-7.1
-4.9	-4.9	-5.0	-3.5	-4.7	-5.6	-7.1	-7.6	-8.0	-8.6	-9.6	-6.2	-6.2	-5.7	-5.6	-5.9	-6.5	-8.5	-10.4	-10.1	-9.2	-10.5	-11.5	-10.6	-9.6	-10.0	-10.5	-11.2	-10.4	-9.3	-7.3	-7.6	-8.5	-9.0	-7.3	-5.9
-4.4	-3.5	-2.7	-2.6	-2.4	-2.1	-2.2	-2.4	-3.6	-4.2	-4.3	-3.3	-3.7	-3.3	-3.5	-3.6	-2.8	-4.3	-5.0	-5.3	-4.7	-5.1	-4.8	-4.2	-4.5	-5.3	-5.9	-5.7	-4.7	-4.2	-3.6	-3.4	-4.0	-4.4	-3.3	-4.0
-2.7	-2.0	-1.9	-1.5	-.7	-.9	-.3	-.3	-1.0	-1.4	-.6	-.8	-1.1	-.6	.0	.3	.9	.5	.6	.1	-.3	-.3	-.2	-.4	-.8	-.4	-.1	.0	.2	.1	.4	.0	-.3	-.6	-1.0	-2.7
1.8	1.9	2.5	2.1	2.2	2.4	2.2	1.6	1.4	1.3	1.5	1.4	1.4	2.1	2.3	2.6	3.0	3.7	3.7	3.4	3.5	3.8	3.5	3.5	3.5	3.5	3.3	3.2	2.9	2.8	2.3	2.0	1.8	1.2	1.1	1.4
5.9	6.2	6.4	6.0	5.4	5.3	5.1	4.8	4.6	4.3	4.2	4.8	3.7	3.9	4.4	5.3	6.0	7.0	7.3	7.7	7.9	8.4	9.9	11.9	10.3	8.6	9.7	10.3	10.0	8.6	8.8	9.6	7.1	6.0	5.4	5.5
8.8	9.0	10.1	11.0	12.3	13.2	11.7	10.4	11.3	10.7	9.2	9.0	6.9	6.8	7.0	9.7	14.3	22.0	27.2	30.1	30.5	33.0	36.1	33.2	25.3	25.5	32.3	37.5	35.5	33.8	33.9	30.6	27.5	23.5	13.9	9.7
14.1	13.6	13.8	14.9	15.2	16.5	18.1	21.1	22.0	17.9	14.5	13.4	13.8	14.2	16.5	19.5	23.7	28.1	30.4	32.7	33.9	36.1	39.9	41.7	41.6	42.3	41.7	40.1	37.1	35.1	32.2	29.5	26.7	23.4	17.0	14.5

Figure 31. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2001
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations

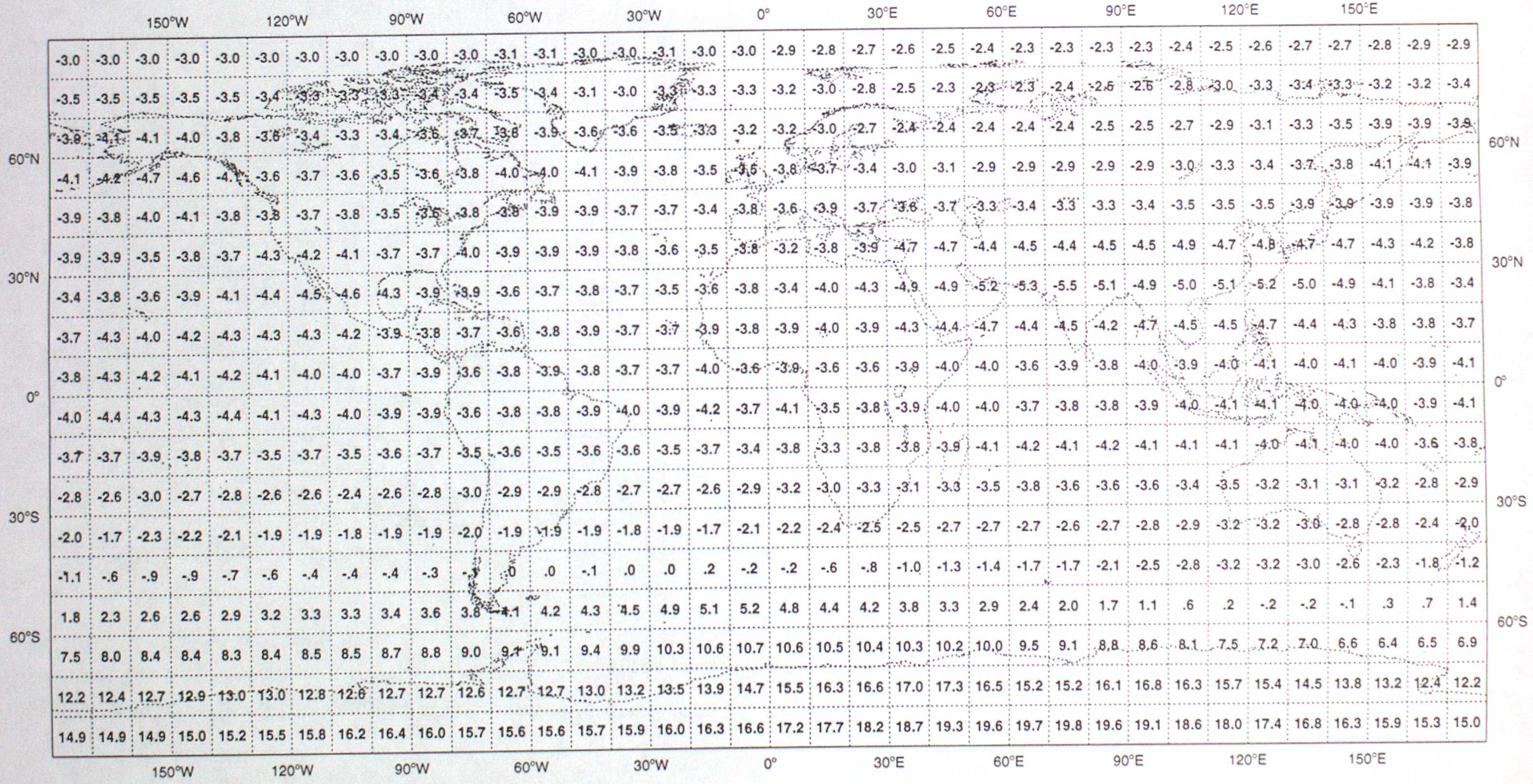


2.2	2.4	2.5	2.5	2.5	2.4	2.4	2.6	2.9	2.9	2.9	2.9	2.8	2.8	2.7	2.7	2.5	2.4	2.6	2.9	2.9	2.9	2.8	2.8	2.6	2.5	2.6	2.5	2.3	2.3	2.4	2.4	2.5	2.4	2.2	2.1
2.3	2.5	2.5	2.9	3.2	3.2	2.8	2.7	2.9	2.9	2.9	2.8	3.1	3.0	2.8	2.6	2.5	2.6	2.8	2.9	3.0	3.2	3.6	3.7	3.2	2.8	2.7	2.5	2.4	2.3	2.2	2.3	2.4	2.4	2.2	2.2
3.0	3.0	2.7	2.9	3.2	3.3	3.2	3.3	3.4	3.2	2.9	2.7	2.9	3.1	3.8	3.2	2.9	3.2	3.3	3.3	3.3	3.4	3.8	3.6	3.0	2.8	3.1	3.0	2.7	2.7	2.8	2.6	2.4	2.5	2.4	2.7
3.6	3.5	3.3	3.3	3.4	3.5	3.4	3.7	3.7	3.3	3.2	3.4	3.7	4.2	4.0	4.0	3.8	3.5	3.3	3.0	3.0	3.1	2.9	3.0	2.8	3.3	3.4	3.0	3.2	3.4	3.1	3.5	3.8	3.6	3.2	3.4
4.1	4.1	4.0	3.7	3.5	4.2	3.7	3.7	4.3	4.3	4.6	4.3	4.3	4.1	4.1	4.5	4.6	4.5	4.2	4.3	4.5	4.4	4.1	4.3	4.4	4.0	4.0	4.1	4.4	3.9	4.5	4.5	4.6	4.3	4.2	4.2
3.7	3.7	3.5	3.4	4.0	4.3	4.0	3.8	4.7	5.3	5.0	4.6	4.1	4.2	4.3	4.4	4.7	4.5	4.1	4.2	4.1	4.5	5.2	4.9	5.0	5.1	3.3	2.9	3.4	4.0	4.9	5.1	4.7	4.5	4.2	3.7
3.6	3.7	4.0	3.3	3.9	4.4	3.6	3.2	4.2	4.1	3.2	3.4	3.5	4.2	4.1	4.0	4.1	3.8	4.5	4.2	3.5	4.8	4.1	3.7	3.9	3.9	3.4	2.0	2.5	3.2	3.3	3.3	3.5	4.1	3.5	3.0
3.8	4.7	4.7	4.5	4.4	4.4	3.7	2.5	2.9	3.0	3.0	3.2	3.6	3.4	3.6	3.4	3.4	3.5	3.7	4.1	3.7	3.2	3.6	3.7	3.2	2.4	2.2	2.3	3.0	3.3	2.1	2.7	2.9	3.0	2.4	3.6
3.5	4.2	3.8	3.8	3.6	3.9	3.5	3.4	3.5	3.2	2.4	3.3	3.0	3.1	3.3	3.8	3.9	3.5	3.0	2.3	2.4	3.4	2.6	3.1	2.6	2.4	2.0	2.2	2.4	2.3	2.5	2.4	2.9	3.3	3.4	3.6
4.0	3.7	2.8	2.8	2.7	2.9	3.1	3.6	3.5	4.0	2.7	3.0	3.2	3.0	2.7	2.5	2.4	2.9	3.0	3.5	4.0	4.1	3.0	4.0	3.6	3.4	2.7	2.5	3.4	4.0	4.0	3.6	2.9	3.0	3.3	3.8
4.9	4.2	3.8	3.6	3.5	3.7	3.0	2.6	3.1	4.2	4.9	3.8	3.7	4.1	3.5	3.0	2.8	3.3	2.7	3.6	4.1	3.0	2.6	2.7	3.8	3.7	4.6	5.0	4.7	4.5	4.3	4.2	3.9	4.0	4.3	4.9
4.4	4.2	4.4	4.5	4.7	4.5	4.2	4.1	4.6	4.0	4.3	4.4	4.7	4.7	4.9	4.8	4.6	4.4	4.2	4.4	5.0	4.9	4.0	3.9	4.2	4.4	4.3	3.9	4.2	4.6	4.9	5.1	4.7	4.5	4.9	4.5
4.3	4.0	4.1	4.3	4.8	4.5	3.8	3.8	4.0	4.2	5.2	4.8	4.3	3.9	4.1	4.4	4.4	4.4	4.3	4.2	4.5	5.1	5.0	4.6	4.7	4.8	4.3	4.2	4.2	4.1	4.2	4.4	4.8	4.6	4.3	4.7
4.2	3.9	3.9	3.5	3.8	3.9	3.7	3.6	3.9	4.2	3.8	3.9	4.2	3.8	3.6	3.3	3.5	4.0	4.1	4.1	4.3	4.1	3.8	4.2	4.2	3.8	3.6	3.3	3.3	3.4	3.5	3.6	3.6	3.7	3.9	4.4
3.4	3.4	3.2	3.2	3.2	3.3	3.5	3.5	3.6	3.8	3.8	3.7	3.7	3.1	3.3	3.5	3.5	3.3	3.1	3.0	3.0	2.8	3.0	3.0	3.0	3.0	3.1	3.1	3.0	2.9	3.0	3.2	3.3	3.2	3.3	3.5
3.3	3.3	2.9	2.9	2.9	2.8	2.9	2.9	3.0	3.1	3.2	3.3	3.2	3.3	3.3	3.1	3.2	3.0	2.9	2.7	2.7	3.0	5.0	6.9	5.1	3.0	5.2	6.4	6.3	5.2	6.0	7.2	5.2	3.7	3.1	3.3
2.6	2.7	3.0	3.9	5.6	6.8	5.8	5.2	5.3	5.2	3.9	3.6	3.2	3.1	3.0	4.6	7.2	9.3	10.0	10.4	11.4	10.8	9.1	5.9	7.4	7.9	7.2	7.9	7.5	7.4	6.5	4.6	5.1	5.1	5.6	2.5
7.2	6.3	6.0	5.5	5.5	5.3	5.1	4.7	4.3	4.8	5.8	6.4	6.9	7.2	7.4	7.0	6.7	6.3	5.8	5.1	4.6	4.9	5.8	6.2	6.2	6.2	6.0	5.8	5.0	4.8	4.8	4.6	4.7	5.4	7.9	7.5

Figure 32. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2001

Channel: HIRS4 (400 hPa)

NOAA15, using all observations

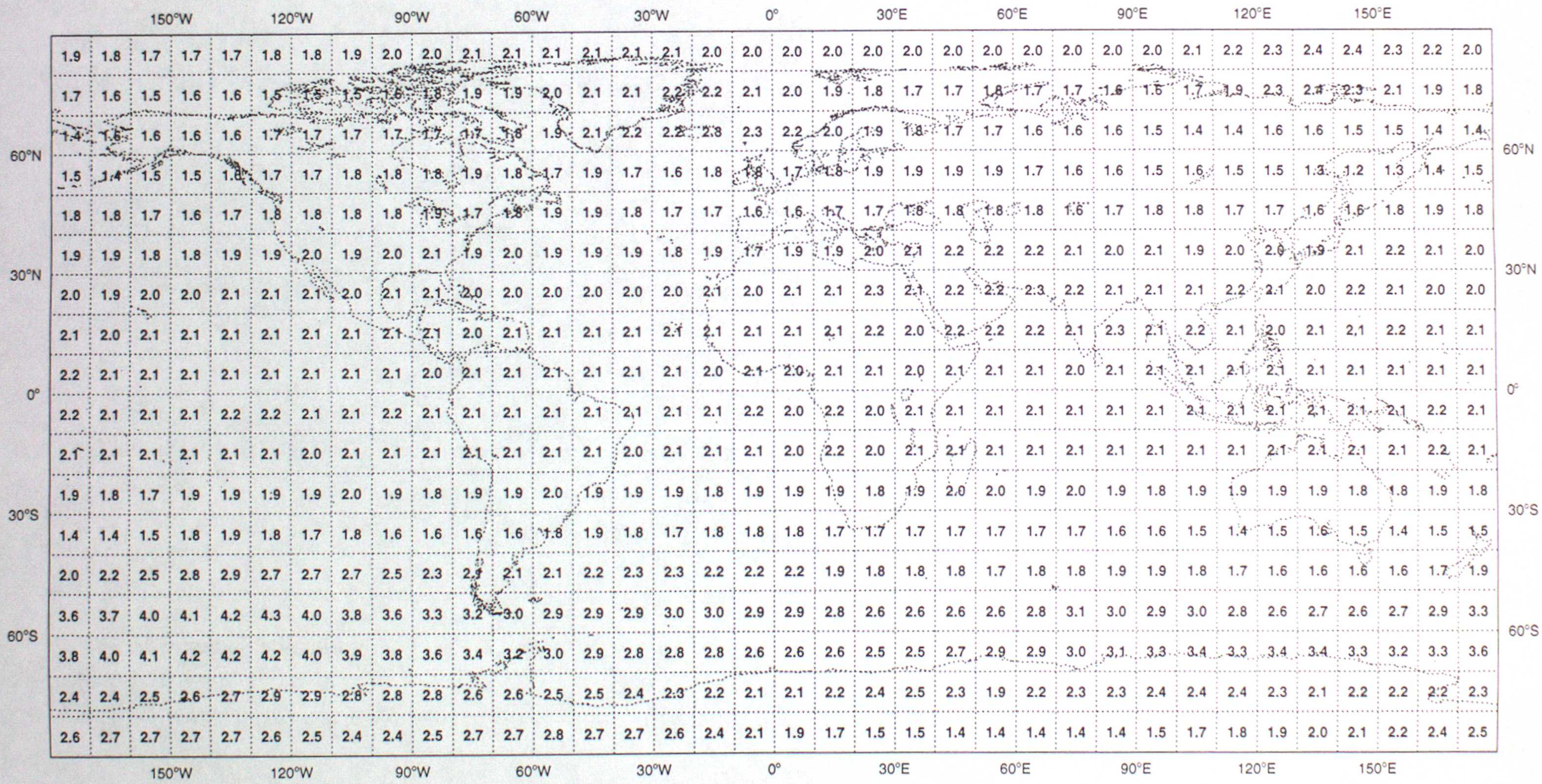


-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.1	-3.1	-3.0	-3.0	-3.1	-3.0	-3.0	-2.9	-2.8	-2.7	-2.6	-2.5	-2.4	-2.3	-2.3	-2.3	-2.3	-2.4	-2.5	-2.6	-2.7	-2.7	-2.8	-2.9	-2.9
-3.5	-3.5	-3.5	-3.5	-3.5	-3.4	-3.3	-3.3	-3.3	-3.4	-3.4	-3.5	-3.4	-3.1	-3.0	-3.3	-3.3	-3.3	-3.2	-3.0	-2.8	-2.5	-2.3	-2.3	-2.3	-2.4	-2.5	-2.6	-2.8	-3.0	-3.3	-3.4	-3.3	-3.2	-3.2	-3.4
-3.8	-4.1	-4.1	-4.0	-3.8	-3.6	-3.4	-3.3	-3.4	-3.6	-3.7	-3.8	-3.9	-3.6	-3.6	-3.5	-3.3	-3.2	-3.2	-3.0	-2.7	-2.4	-2.4	-2.4	-2.4	-2.4	-2.5	-2.5	-2.7	-2.9	-3.1	-3.3	-3.5	-3.9	-3.9	-3.9
-4.1	-4.2	-4.7	-4.6	-4.1	-3.6	-3.7	-3.6	-3.5	-3.6	-3.8	-4.0	-4.0	-4.1	-3.9	-3.8	-3.5	-3.5	-3.8	-3.7	-3.4	-3.0	-3.1	-2.9	-2.9	-2.9	-2.9	-2.9	-3.0	-3.3	-3.4	-3.7	-3.8	-4.1	-4.1	-3.9
-3.9	-3.8	-4.0	-4.1	-3.8	-3.8	-3.7	-3.8	-3.5	-3.5	-3.8	-3.8	-3.9	-3.9	-3.7	-3.7	-3.4	-3.8	-3.6	-3.9	-3.7	-3.6	-3.7	-3.3	-3.4	-3.3	-3.3	-3.4	-3.5	-3.5	-3.5	-3.9	-3.9	-3.9	-3.9	-3.8
-3.9	-3.9	-3.5	-3.8	-3.7	-4.3	-4.2	-4.1	-3.7	-3.7	-4.0	-3.9	-3.9	-3.9	-3.8	-3.6	-3.5	-3.8	-3.2	-3.8	-3.9	-4.7	-4.7	-4.4	-4.5	-4.4	-4.5	-4.5	-4.9	-4.7	-4.8	-4.7	-4.7	-4.3	-4.2	-3.8
-3.4	-3.8	-3.6	-3.9	-4.1	-4.4	-4.5	-4.6	-4.3	-3.9	-3.9	-3.6	-3.7	-3.8	-3.7	-3.5	-3.6	-3.8	-3.4	-4.0	-4.3	-4.9	-4.9	-5.2	-5.3	-5.5	-5.1	-4.9	-5.0	-5.1	-5.2	-5.0	-4.9	-4.1	-3.8	-3.4
-3.7	-4.3	-4.0	-4.2	-4.3	-4.3	-4.3	-4.2	-3.9	-3.8	-3.7	-3.6	-3.8	-3.9	-3.7	-3.7	-3.9	-3.8	-3.9	-4.0	-3.9	-4.3	-4.4	-4.7	-4.4	-4.5	-4.2	-4.7	-4.5	-4.5	-4.7	-4.4	-4.3	-3.8	-3.8	-3.7
-3.8	-4.3	-4.2	-4.1	-4.2	-4.1	-4.0	-4.0	-3.7	-3.9	-3.6	-3.8	-3.9	-3.8	-3.7	-3.7	-4.0	-3.6	-3.9	-3.6	-3.6	-3.9	-4.0	-4.0	-3.6	-3.9	-3.8	-4.0	-3.9	-4.0	-4.1	-4.0	-4.1	-4.0	-3.9	-4.1
-4.0	-4.4	-4.3	-4.3	-4.4	-4.1	-4.3	-4.0	-3.9	-3.9	-3.6	-3.8	-3.8	-3.9	-4.0	-3.9	-4.2	-3.7	-4.1	-3.5	-3.8	-3.9	-4.0	-4.0	-3.7	-3.8	-3.8	-3.9	-4.0	-4.1	-4.1	-4.0	-4.0	-4.0	-3.9	-4.1
-3.7	-3.7	-3.9	-3.8	-3.7	-3.5	-3.7	-3.5	-3.6	-3.7	-3.5	-3.6	-3.5	-3.6	-3.6	-3.5	-3.7	-3.4	-3.8	-3.3	-3.8	-3.8	-3.9	-4.1	-4.2	-4.1	-4.2	-4.1	-4.1	-4.1	-4.0	-4.1	-4.0	-4.0	-3.6	-3.8
-2.8	-2.6	-3.0	-2.7	-2.8	-2.6	-2.6	-2.4	-2.6	-2.8	-3.0	-2.9	-2.9	-2.8	-2.7	-2.7	-2.6	-2.9	-3.2	-3.0	-3.3	-3.1	-3.3	-3.5	-3.8	-3.6	-3.6	-3.6	-3.4	-3.5	-3.2	-3.1	-3.1	-3.2	-2.8	-2.9
-2.0	-1.7	-2.3	-2.2	-2.1	-1.9	-1.9	-1.8	-1.9	-1.9	-2.0	-1.9	-1.9	-1.9	-1.8	-1.9	-1.7	-2.1	-2.2	-2.4	-2.5	-2.5	-2.7	-2.7	-2.7	-2.6	-2.7	-2.8	-2.9	-3.2	-3.2	-3.0	-2.8	-2.8	-2.4	-2.0
-1.1	-.6	-.9	-.9	-.7	-.6	-.4	-.4	-.4	-.3	-.1	.0	.0	-.1	.0	.0	.2	-.2	-.2	-.6	-.8	-1.0	-1.3	-1.4	-1.7	-1.7	-2.1	-2.5	-2.8	-3.2	-3.2	-3.0	-2.6	-2.3	-1.8	-1.2
1.8	2.3	2.6	2.6	2.9	3.2	3.3	3.3	3.4	3.6	3.8	4.1	4.2	4.3	4.5	4.9	5.1	5.2	4.8	4.4	4.2	3.8	3.3	2.9	2.4	2.0	1.7	1.1	.6	.2	-.2	-.2	-.1	.3	.7	1.4
7.5	8.0	8.4	8.4	8.3	8.4	8.5	8.5	8.7	8.8	9.0	9.1	9.1	9.4	9.9	10.3	10.6	10.7	10.6	10.5	10.4	10.3	10.2	10.0	9.5	9.1	8.8	8.6	8.1	7.5	7.2	7.0	6.6	6.4	6.5	6.9
12.2	12.4	12.7	12.9	13.0	13.0	12.8	12.6	12.7	12.7	12.6	12.7	12.7	13.0	13.2	13.5	13.9	14.7	15.5	16.3	16.6	17.0	17.3	16.5	15.2	15.2	16.1	16.8	16.3	15.7	15.4	14.5	13.8	13.2	12.4	12.2
14.9	14.9	14.9	15.0	15.2	15.5	15.8	16.2	16.4	16.0	15.7	15.6	15.6	15.7	15.9	16.0	16.3	16.6	17.2	17.7	18.2	18.7	19.3	19.6	19.7	19.8	19.6	19.1	18.6	18.0	17.4	16.8	16.3	15.9	15.3	15.0

Figure 33. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2001

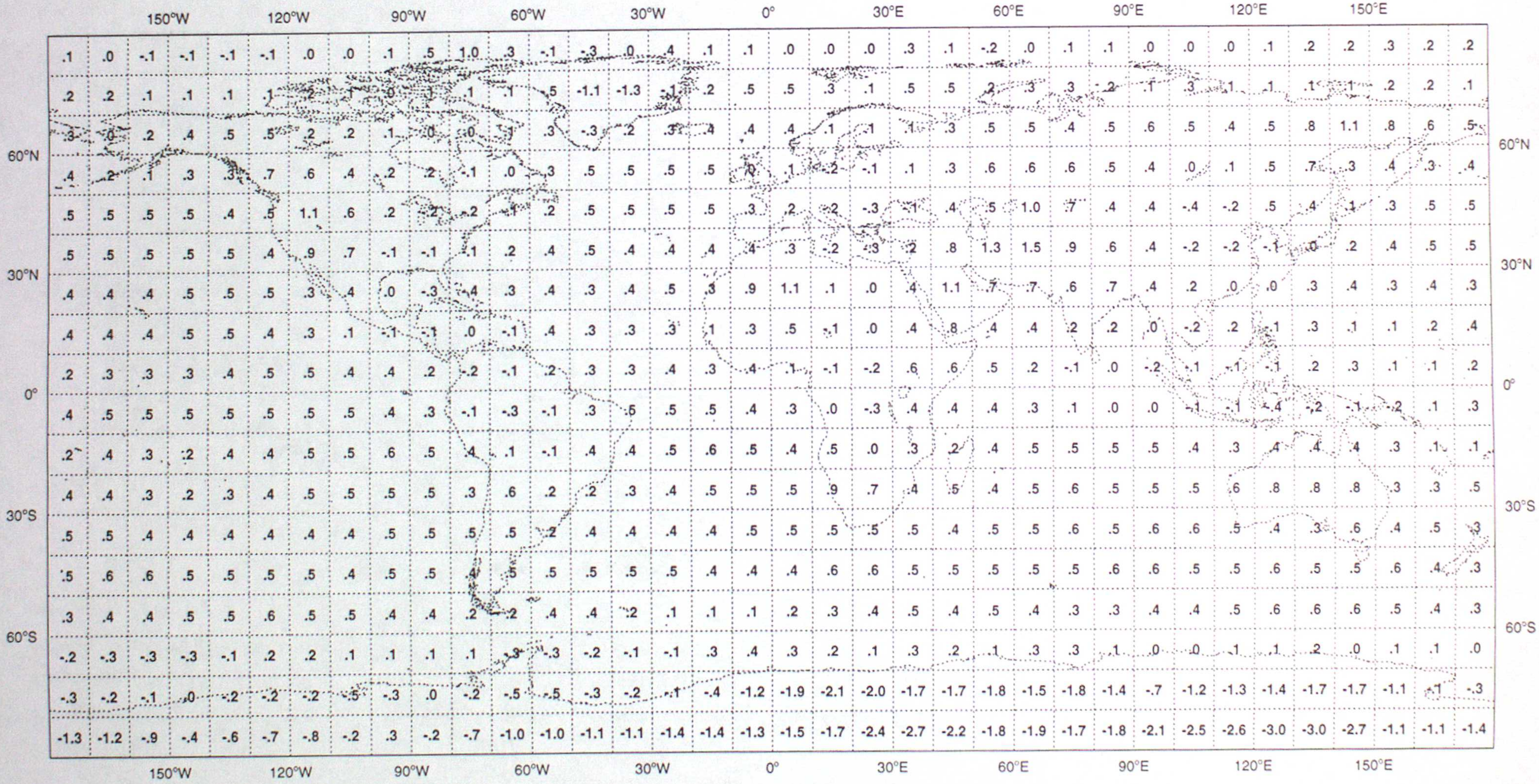
Channel: HIRS4 (400 hPa)

NOAA15, using all observations



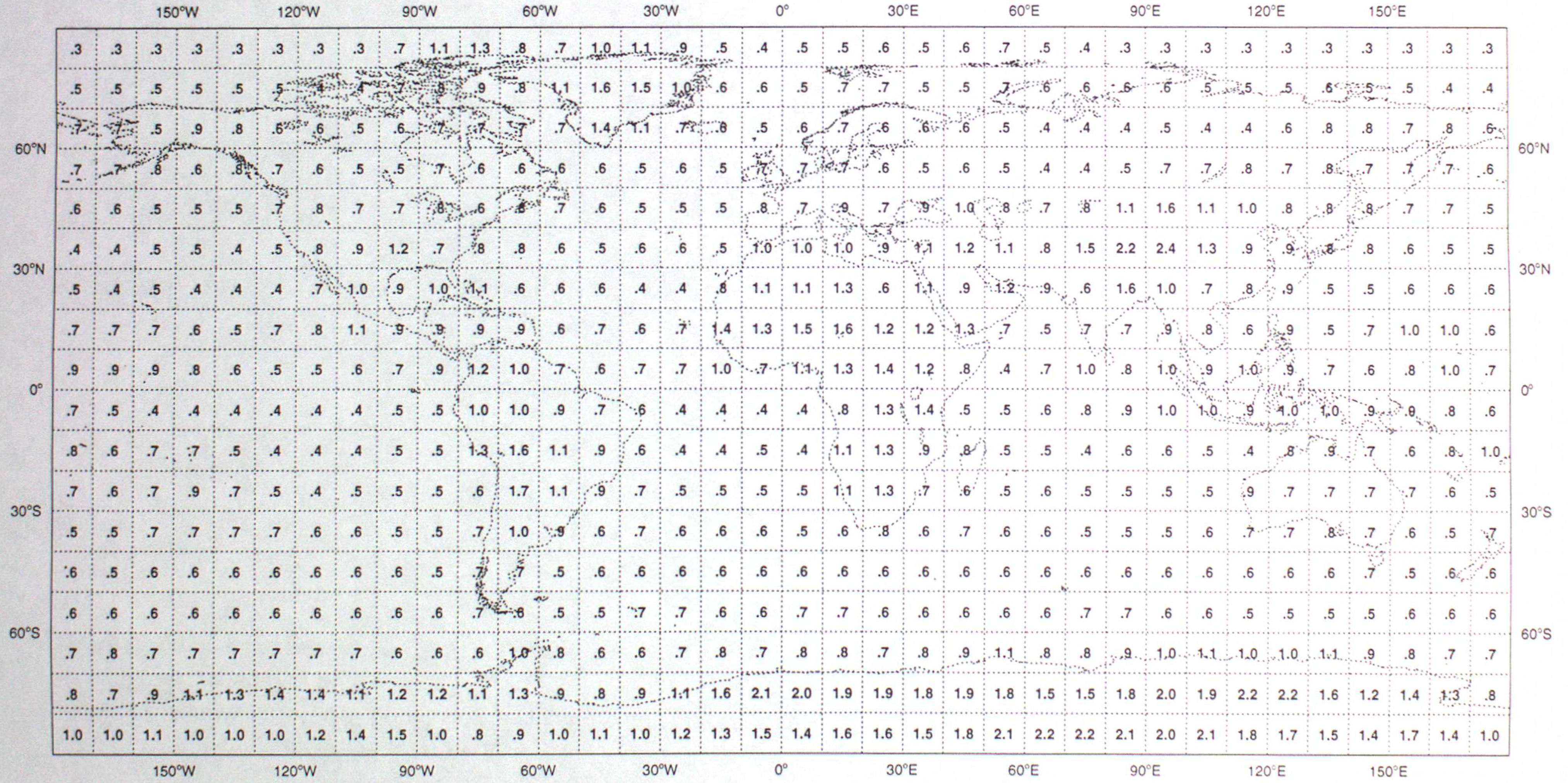
1.9	1.8	1.7	1.7	1.7	1.8	1.8	1.9	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.4	2.4	2.3	2.2	2.0
1.7	1.6	1.5	1.6	1.6	1.5	1.5	1.5	1.6	1.8	1.9	1.9	2.0	2.1	2.1	2.2	2.2	2.1	2.0	1.9	1.8	1.7	1.7	1.8	1.7	1.7	1.6	1.5	1.7	1.9	2.3	2.4	2.3	2.1	1.9	1.8
1.4	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.9	2.1	2.2	2.2	2.8	2.3	2.2	2.0	1.9	1.8	1.7	1.7	1.6	1.6	1.6	1.5	1.4	1.4	1.6	1.6	1.5	1.5	1.4	1.4
1.5	1.4	1.5	1.5	1.6	1.7	1.7	1.8	1.8	1.8	1.9	1.8	1.7	1.9	1.7	1.6	1.8	1.8	1.7	1.8	1.9	1.9	1.9	1.9	1.7	1.6	1.6	1.5	1.6	1.5	1.5	1.3	1.2	1.3	1.4	1.5
1.8	1.8	1.7	1.6	1.7	1.8	1.8	1.8	1.8	1.9	1.7	1.8	1.9	1.9	1.8	1.7	1.7	1.6	1.6	1.7	1.7	1.8	1.8	1.8	1.8	1.6	1.7	1.8	1.8	1.7	1.7	1.6	1.6	1.8	1.9	1.8
1.9	1.9	1.8	1.8	1.9	1.9	2.0	1.9	2.0	2.1	1.9	2.0	1.9	1.9	1.9	1.8	1.9	1.7	1.9	1.9	2.0	2.1	2.2	2.2	2.2	2.1	2.0	2.1	1.9	2.0	2.0	1.9	2.1	2.2	2.1	2.0
2.0	1.9	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.3	2.1	2.2	2.2	2.3	2.2	2.1	2.1	2.1	2.2	2.1	2.0	2.2	2.1	2.0	2.0
2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.0	2.2	2.2	2.2	2.1	2.3	2.1	2.2	2.1	2.0	2.1	2.1	2.2	2.1	2.1
2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
2.2	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.0	2.2	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1
2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.2	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1
1.9	1.8	1.7	1.9	1.9	1.9	1.9	2.0	1.9	1.8	1.9	1.9	2.0	1.9	1.9	1.9	1.8	1.9	1.9	1.9	1.8	1.9	2.0	2.0	1.9	2.0	1.9	1.8	1.9	1.9	1.9	1.9	1.8	1.8	1.9	1.8
1.4	1.4	1.5	1.8	1.9	1.8	1.7	1.8	1.6	1.6	1.6	1.6	1.8	1.9	1.8	1.7	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.5	1.4	1.5	1.6	1.5	1.4	1.5	1.5
2.0	2.2	2.5	2.8	2.9	2.7	2.7	2.7	2.5	2.3	2.1	2.1	2.1	2.2	2.3	2.3	2.2	2.2	2.2	1.9	1.8	1.8	1.8	1.7	1.8	1.8	1.9	1.9	1.8	1.7	1.6	1.6	1.6	1.6	1.7	1.9
3.6	3.7	4.0	4.1	4.2	4.3	4.0	3.8	3.6	3.3	3.2	3.0	2.9	2.9	2.9	3.0	3.0	2.9	2.9	2.8	2.6	2.6	2.6	2.6	2.8	3.1	3.0	2.9	3.0	2.8	2.6	2.7	2.6	2.7	2.9	3.3
3.8	4.0	4.1	4.2	4.2	4.2	4.0	3.9	3.8	3.6	3.4	3.2	3.0	2.9	2.8	2.8	2.8	2.6	2.6	2.6	2.5	2.5	2.7	2.9	2.9	3.0	3.1	3.3	3.4	3.3	3.4	3.4	3.3	3.2	3.3	3.6
2.4	2.4	2.5	2.6	2.7	2.9	2.9	2.8	2.8	2.8	2.6	2.6	2.5	2.5	2.4	2.3	2.2	2.1	2.1	2.2	2.4	2.5	2.3	1.9	2.2	2.3	2.3	2.4	2.4	2.4	2.3	2.1	2.2	2.2	2.2	2.3
2.6	2.7	2.7	2.7	2.7	2.6	2.5	2.4	2.4	2.5	2.7	2.7	2.8	2.7	2.7	2.6	2.4	2.1	1.9	1.7	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.5	1.7	1.8	1.9	2.0	2.1	2.2	2.4	2.5

Figure 34. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2001
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations



.1	.0	-.1	-.1	-.1	-.1	.0	.0	.1	.5	1.0	.3	-.1	-.3	.0	.4	.1	.1	.0	.0	.0	.3	.1	-.2	.0	.1	.1	.0	.0	.0	.1	.2	.2	.3	.2	.2
.2	.2	.1	.1	.1	.1	.2	.1	.0	.1	.1	.1	.5	-1.1	-1.3	-.1	.2	.5	.5	.3	.1	.5	.5	.2	.3	.3	.2	.1	.3	.1	.1	.1	.1	.2	.2	.1
.3	.0	.2	.4	.5	.5	.2	.2	.1	.0	.0	.1	.3	-.3	.2	.3	.4	.4	.4	.1	.1	.1	.3	.5	.5	.4	.5	.6	.5	.4	.5	.8	1.1	.8	.6	.5
.4	.2	.1	.3	.3	.7	.6	.4	.2	.2	-.1	.0	.3	.5	.5	.5	.5	.0	.1	-.2	-.1	.1	.3	.6	.6	.6	.5	.4	.0	.1	.5	.7	.3	.4	.3	.4
.5	.5	.5	.5	.4	.5	1.1	.6	.2	-.2	-.2	-.1	.2	.5	.5	.5	.5	.3	.2	-.2	-.3	-.1	.4	.5	1.0	.7	.4	.4	-.4	-.2	.5	.4	.1	.3	.5	.5
.5	.5	.5	.5	.5	.4	.9	.7	-.1	-.1	.1	.2	.4	.5	.4	.4	.4	.4	.3	-.2	-.3	.2	.8	1.3	1.5	.9	.6	.4	-.2	-.2	-.1	.0	.2	.4	.5	.5
.4	.4	.4	.5	.5	.5	.3	.4	.0	-.3	-.4	.3	.4	.3	.4	.5	.3	.9	1.1	.1	.0	.4	1.1	.7	.7	.6	.7	.4	.2	.0	.0	.3	.4	.3	.4	.3
.4	.4	.4	.5	.5	.4	.3	.1	-.1	-.1	.0	-.1	.4	.3	.3	.3	.1	.3	.5	-.1	.0	.4	.8	.4	.4	.2	.2	.0	-.2	.2	-.1	.3	.1	.1	.2	.4
.2	.3	.3	.3	.4	.5	.5	.4	.4	.2	-.2	-.1	.2	.3	.3	.4	.3	.4	.1	-.1	-.2	.6	.6	.5	.2	-.1	.0	-.2	.1	-.1	-.1	.2	.3	.1	.1	.2
.4	.5	.5	.5	.5	.5	.5	.5	.4	.3	-.1	-.3	-.1	.3	.5	.5	.5	.4	.3	.0	-.3	.4	.4	.4	.3	.1	.0	.0	-.1	-.1	-.4	-.2	-.1	-.2	.1	.3
.2	.4	.3	.2	.4	.4	.5	.5	.6	.5	.4	.1	-.1	.4	.4	.5	.6	.5	.4	.5	.0	.3	.2	.4	.5	.5	.5	.5	.4	.3	.4	.4	.4	.3	.1	.1
.4	.4	.3	.2	.3	.4	.5	.5	.5	.5	.3	.6	.2	.2	.3	.4	.5	.5	.5	.9	.7	.4	.5	.4	.5	.6	.5	.5	.5	.6	.8	.8	.8	.3	.3	.5
.5	.5	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.2	.4	.4	.4	.4	.5	.5	.5	.5	.5	.4	.5	.5	.6	.5	.6	.6	.5	.4	.3	.6	.4	.5	.3
.5	.6	.6	.5	.5	.5	.5	.4	.5	.5	.4	.5	.5	.5	.5	.5	.4	.4	.4	.6	.6	.5	.5	.5	.5	.5	.6	.6	.5	.5	.6	.5	.5	.6	.4	.3
.3	.4	.4	.5	.5	.6	.5	.5	.4	.4	.2	.2	.4	.4	.2	.1	.1	.1	.2	.3	.4	.5	.4	.5	.4	.3	.3	.4	.4	.5	.6	.6	.6	.5	.4	.3
-.2	-.3	-.3	-.3	-.1	.2	.2	.1	.1	.1	.1	.3	-.3	-.2	-.1	-.1	.3	.4	.3	.2	.1	.3	.2	.1	.3	.3	.1	.0	.0	.1	.1	.2	.0	.1	.1	.0
-.3	-.2	-.1	.0	-.2	-.2	-.2	-.5	-.3	.0	-.2	-.5	-.5	-.3	-.2	-.1	-.4	-1.2	-1.9	-2.1	-2.0	-1.7	-1.7	-1.8	-1.5	-1.8	-1.4	-.7	-1.2	-1.3	-1.4	-1.7	-1.7	-1.1	-.1	-.3
-1.3	-1.2	-.9	-.4	-.6	-.7	-.8	-.2	.3	-.2	-.7	-1.0	-1.0	-1.1	-1.1	-1.4	-1.4	-1.3	-1.5	-1.7	-2.4	-2.7	-2.2	-1.8	-1.9	-1.7	-1.8	-2.1	-2.5	-2.6	-3.0	-3.0	-2.7	-1.1	-1.1	-1.4

Figure 35. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2001
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations



.3	.3	.3	.3	.3	.3	.3	.3	.7	1.1	1.3	.8	.7	1.0	1.1	.9	.5	.4	.5	.5	.6	.5	.6	.7	.5	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.5	.5	.5	.5	.5	.5	.4	.4	.7	.8	.9	.8	1.1	1.6	1.5	1.0	.6	.6	.5	.7	.7	.5	.5	.7	.6	.6	.6	.6	.5	.5	.5	.6	.5	.5	.4	.4
.7	.7	.5	.9	.8	.6	.6	.5	.6	.7	.7	.7	.7	1.4	1.1	.7	.8	.5	.6	.7	.6	.6	.6	.5	.4	.4	.4	.5	.4	.4	.6	.8	.8	.7	.8	.6
.7	.7	.8	.6	.8	.7	.6	.5	.5	.7	.6	.6	.6	.6	.5	.6	.5	.7	.7	.7	.6	.5	.6	.5	.4	.4	.5	.7	.7	.8	.7	.8	.7	.7	.7	.6
.6	.6	.5	.5	.5	.7	.8	.7	.7	.8	.6	.8	.7	.6	.5	.5	.5	.8	.7	.9	.7	.9	1.0	.8	.7	.8	1.1	1.6	1.1	1.0	.8	.8	.8	.7	.7	.5
.4	.4	.5	.5	.4	.5	.8	.9	1.2	.7	.8	.8	.6	.5	.6	.6	.5	1.0	1.0	1.0	.9	1.1	1.2	1.1	.8	1.5	2.2	2.4	1.3	.9	.9	.8	.8	.6	.5	.5
.5	.4	.5	.4	.4	.4	.7	1.0	.9	1.0	1.1	.6	.6	.6	.4	.4	.8	1.1	1.1	1.3	.6	1.1	.9	1.2	.9	.6	1.6	1.0	.7	.8	.9	.5	.5	.6	.6	.6
.7	.7	.7	.6	.5	.7	.8	1.1	.9	.9	.9	.9	.6	.7	.6	.7	1.4	1.3	1.5	1.6	1.2	1.2	1.3	.7	.5	.7	.7	.9	.8	.6	.9	.5	.7	1.0	1.0	.6
.9	.9	.9	.8	.6	.5	.5	.6	.7	.9	1.2	1.0	.7	.6	.7	.7	1.0	.7	1.1	1.3	1.4	1.2	.8	.4	.7	1.0	.8	1.0	.9	1.0	.9	.7	.6	.8	1.0	.7
.7	.5	.4	.4	.4	.4	.4	.4	.5	.5	1.0	1.0	.9	.7	.6	.4	.4	.4	.4	.8	1.3	1.4	.5	.5	.6	.8	.9	1.0	1.0	.9	1.0	1.0	.9	.9	.8	.6
.8	.6	.7	.7	.5	.4	.4	.4	.5	.5	1.3	1.6	1.1	.9	.6	.4	.4	.5	.4	1.1	1.3	.9	.8	.5	.5	.4	.6	.6	.5	.4	.8	.9	.7	.6	.8	1.0
.7	.6	.7	.9	.7	.5	.4	.5	.5	.5	.6	1.7	1.1	.9	.7	.5	.5	.5	.5	1.1	1.3	.7	.6	.5	.6	.5	.5	.5	.5	.9	.7	.7	.7	.7	.6	.5
.5	.5	.7	.7	.7	.7	.6	.6	.5	.5	.7	1.0	.9	.6	.7	.6	.6	.6	.5	.6	.8	.6	.7	.6	.6	.5	.5	.5	.6	.7	.7	.8	.7	.6	.5	.7
.6	.5	.6	.6	.6	.6	.6	.6	.6	.5	.7	.7	.5	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.7	.5	.6	.6
.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.7	.6	.5	.5	.7	.7	.6	.6	.7	.7	.6	.6	.6	.6	.6	.7	.7	.6	.6	.5	.5	.5	.5	.6	.6	.6
.7	.8	.7	.7	.7	.7	.7	.7	.6	.6	.6	1.0	.8	.6	.6	.7	.8	.7	.8	.8	.7	.8	.9	1.1	.8	.8	.9	1.0	1.1	1.0	1.0	1.1	.9	.8	.7	.7
.8	.7	.9	1.1	1.3	1.4	1.4	1.1	1.2	1.2	1.1	1.3	.9	.8	.9	1.1	1.6	2.1	2.0	1.9	1.9	1.8	1.9	1.8	1.5	1.5	1.8	2.0	1.9	2.2	2.2	1.6	1.2	1.4	1.3	.8
1.0	1.0	1.1	1.0	1.0	1.0	1.2	1.4	1.5	1.0	.8	.9	1.0	1.1	1.0	1.2	1.3	1.5	1.4	1.6	1.6	1.5	1.8	2.1	2.2	2.2	2.1	2.0	2.1	1.8	1.7	1.5	1.4	1.7	1.4	1.0

Figure 36. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2001

Channel: AMSUA-7 (300 hPa)

NOAA15, using all observations

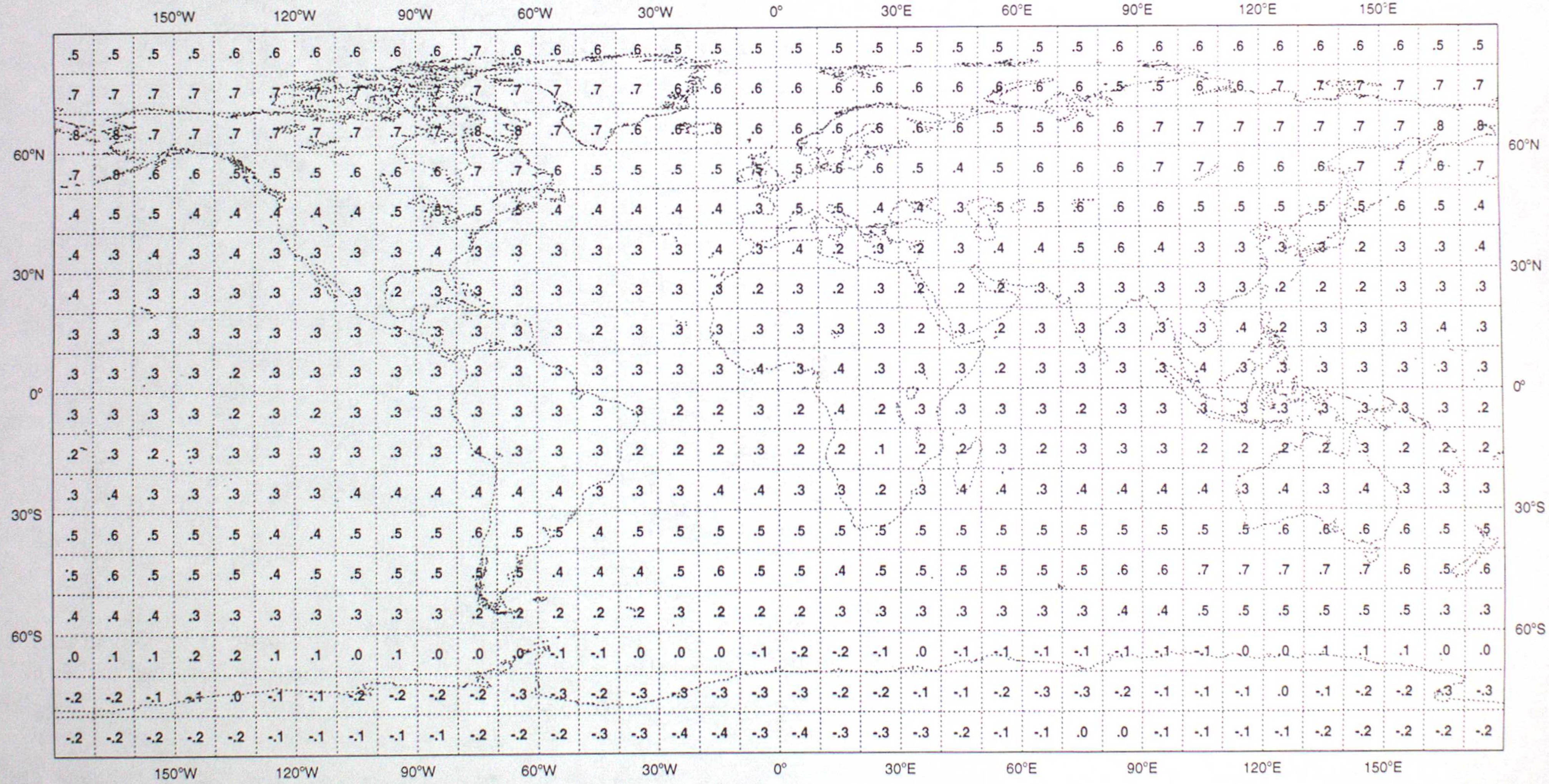
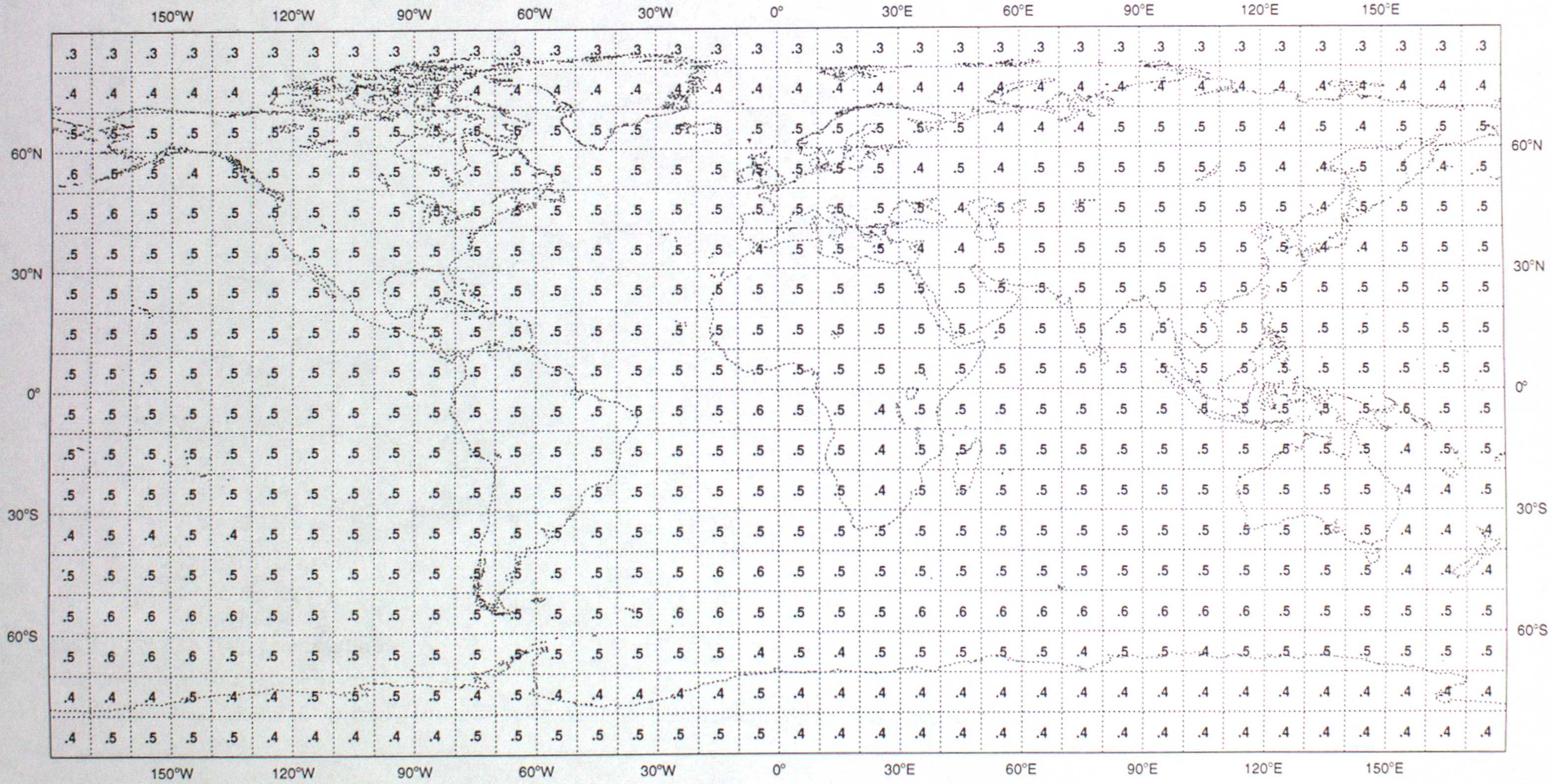

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.5 .5 .5 .5 .6 .6 .6 .6 .6 .6 .7 .6 .6 .6 .6 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .6 .6 .6 .6 .6 .6 .5 .5
.7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .5 .5 .6 .6 .7 .7 .7 .7 .7 .7
.8 .8 .7 .7 .7 .7 .7 .7 .7 .7 .8 .8 .7 .7 .6 .6 .8 .6 .6 .6 .6 .6 .6 .5 .5 .6 .6 .7 .7 .7 .7 .7 .7 .7 .8 .8
.7 .8 .6 .6 .5 .5 .5 .6 .6 .6 .7 .7 .6 .5 .5 .5 .5 .5 .5 .6 .6 .5 .4 .5 .6 .6 .6 .7 .7 .6 .6 .6 .7 .7 .6 .7
.4 .5 .5 .4 .4 .4 .4 .4 .5 .5 .5 .5 .4 .4 .4 .4 .4 .3 .5 .5 .4 .4 .3 .5 .5 .6 .6 .6 .5 .5 .5 .5 .5 .6 .5 .4
.4 .3 .4 .3 .4 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .4 .3 .4 .2 .3 .2 .3 .4 .4 .5 .6 .4 .3 .3 .3 .3 .2 .3 .3 .4
.4 .3 .3 .3 .3 .3 .3 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .2 .3 .2 .3 .2 .2 .2 .3 .3 .3 .3 .3 .3 .2 .2 .2 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .3 .3 .3 .3 .3 .3 .3 .2 .3 .2 .3 .3 .3 .3 .3 .4 .2 .3 .3 .3 .4 .3
.3 .3 .3 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .4 .3 .3 .3 .2 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .2 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .3 .2 .4 .2 .3 .3 .3 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2
.2 .3 .2 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .2 .2 .2 .3 .2 .2 .1 .2 .2 .3 .2 .3 .3 .3 .2 .2 .2 .2 .3 .2 .2 .2
.3 .4 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .3 .3 .3 .4 .4 .3 .3 .2 .3 .4 .4 .3 .4 .4 .4 .4 .3 .4 .3 .4 .3 .3 .3
.5 .6 .5 .5 .5 .4 .4 .5 .5 .5 .6 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .6 .6 .5 .5
.5 .6 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .4 .4 .4 .5 .6 .5 .5 .4 .5 .5 .5 .5 .5 .5 .6 .6 .7 .7 .7 .7 .7 .6 .5 .6
.4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .3 .2 .2 .2 .3 .3 .3 .3 .3 .3 .3 .4 .4 .5 .5 .5 .5 .5 .5 .3 .3
.0 .1 .1 .2 .2 .1 .1 .0 .1 .0 .0 .0 -.1 -.1 .0 .0 .0 -.1 -.2 -.2 -.1 .0 -.1 -.1 -.1 -.1 -.1 -.1 -.1 .0 .0 .1 .1 .1 .0 .0
-.2 -.2 -.1 -.1 .0 -.1 -.1 -.2 -.2 -.2 -.2 -.3 -.3 -.2 -.3 -.3 -.3 -.3 -.3 -.2 -.2 -.1 -.1 -.2 -.3 -.3 -.2 -.1 -.1 -.1 .0 -.1 -.2 -.2 -.3 -.3
-.2 -.2 -.2 -.2 -.2 -.1 -.1 -.1 -.1 -.1 -.2 -.2 -.2 -.3 -.3 -.4 -.4 -.3 -.4 -.3 -.3 -.3 -.2 -.1 -.1 .0 .0 -.1 -.1 -.1 -.1 -.2 -.2 -.2 -.2 -.2

Figure 37. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2001

Channel: AMSUA-7 (300 hPa)

NOAA15, using all observations



.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.5	.5	.5	.5	.4	.5	.4	.5	.5	.5
.6	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.4	.5	.5	.5	.5	.5	.5	.4	.4	.5	.5	.4	.5
.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.5
.4	.5	.4	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4
.5	.6	.6	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.5	.5	.5	.5	.6	.6	.6	.6	.6	.6	.6	.6	.6	.5	.5	.5	.5	.5	.5
.5	.6	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.4	.5	.5	.5	.5	.5	.4	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5
.4	.4	.4	.5	.4	.4	.5	.5	.5	.5	.4	.5	.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.5	.5	.5	.5	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4

Figure 38. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2001
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations

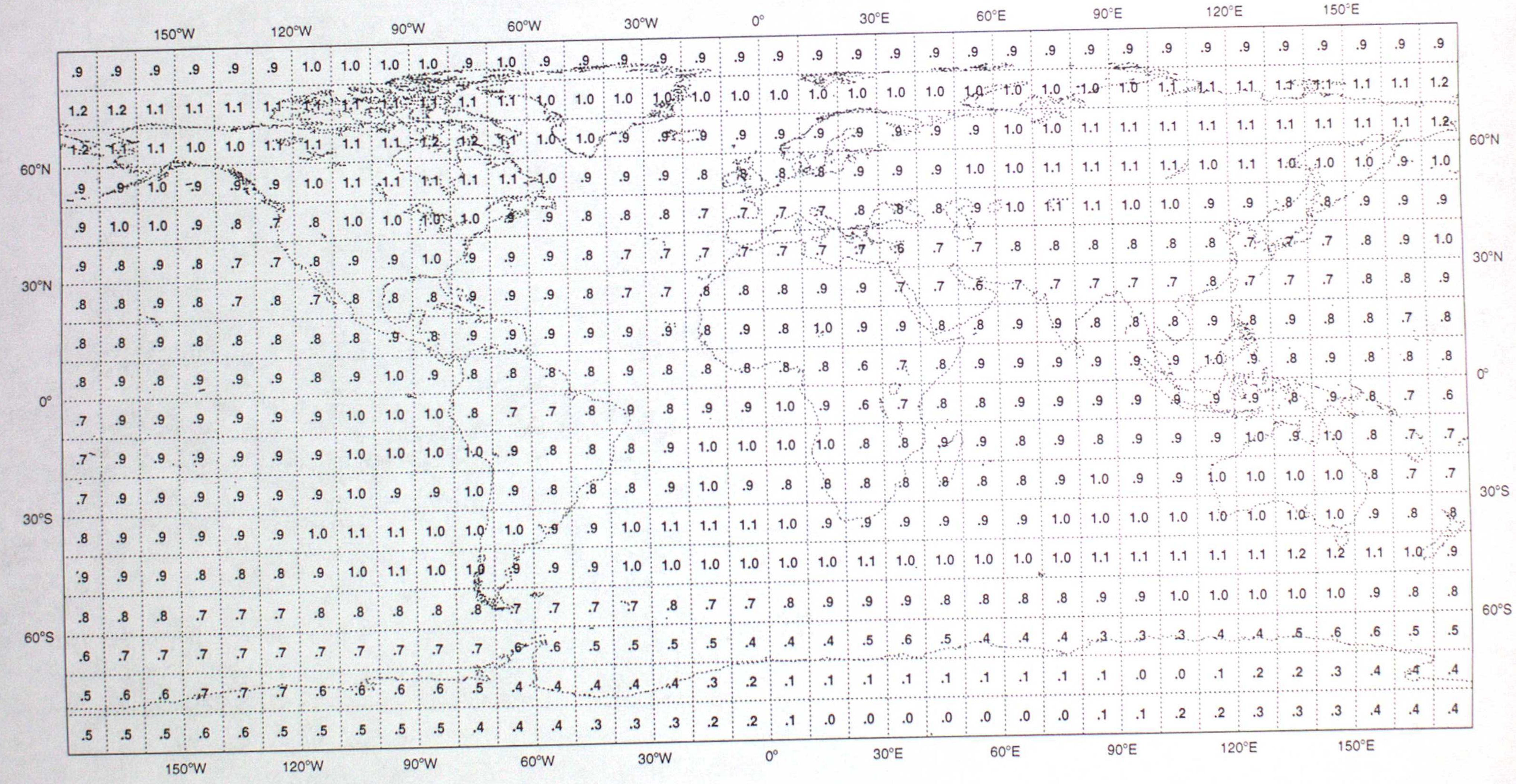

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.9 .9 .9 .9 .9 .9 1.0 1.0 1.0 1.0 .9 1.0 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9
1.2 1.2 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.2
1.2 1.1 1.1 1.0 1.0 1.1 1.1 1.1 1.1 1.2 1.2 1.1 1.0 1.0 .9 .9 .9 .9 .9 .9 .9 .9 .9 .9 1.0 1.0 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.2
.9 .9 1.0 .9 .9 .9 1.0 1.1 1.1 1.1 1.1 1.1 1.0 .9 .9 .9 .8 .8 .8 .8 .9 .9 .9 1.0 1.0 1.1 1.1 1.1 1.1 1.0 1.1 1.0 1.0 1.0 .9 1.0
.9 1.0 1.0 .9 .8 .7 .8 1.0 1.0 1.0 1.0 .9 .9 .8 .8 .8 .7 .7 .7 .7 .8 .8 .8 .9 1.0 1.1 1.1 1.0 1.0 .9 .9 .8 .8 .9 .9 .9
.9 .8 .9 .8 .7 .7 .8 .9 .9 1.0 .9 .9 .9 .8 .7 .7 .7 .7 .7 .7 .7 .6 .7 .7 .8 .8 .8 .8 .8 .8 .7 .7 .7 .8 .9 1.0
.8 .8 .9 .8 .7 .8 .7 .8 .8 .8 .9 .9 .9 .8 .7 .7 .8 .8 .8 .9 .9 .7 .7 .6 .7 .7 .7 .7 .7 .8 .7 .7 .7 .8 .8 .9
.8 .8 .9 .8 .8 .8 .8 .8 .9 .8 .9 .9 .9 .9 .9 .9 .8 .9 .8 1.0 .9 .9 .8 .8 .9 .9 .8 .8 .8 .9 .8 .9 .8 .8 .7 .8
.8 .9 .8 .9 .9 .9 .8 .9 1.0 .9 .8 .8 .8 .8 .9 .8 .8 .8 .8 .8 .6 .7 .8 .9 .9 .9 .9 .9 .9 1.0 .9 .8 .9 .8 .8 .8
.7 .9 .9 .9 .9 .9 .9 1.0 1.0 1.0 .8 .7 .7 .8 .9 .8 .9 .9 1.0 .9 .6 .7 .8 .8 .9 .9 .9 .9 .9 .9 .9 .8 .9 .8 .7 .6
.7 .9 .9 .9 .9 .9 .9 1.0 1.0 1.0 1.0 .9 .8 .8 .8 .9 1.0 1.0 1.0 1.0 .8 .8 .9 .9 .8 .9 .8 .9 .9 .9 1.0 .9 1.0 .8 .7 .7
.7 .9 .9 .9 .9 .9 .9 1.0 .9 .9 1.0 .9 .8 .8 .8 .9 1.0 .9 .8 .8 .8 .8 .8 .8 .8 .9 1.0 .9 .9 1.0 1.0 1.0 1.0 .8 .7 .7
.8 .9 .9 .9 .9 .9 1.0 1.1 1.1 1.0 1.0 1.0 .9 .9 1.0 1.1 1.1 1.1 1.0 .9 .9 .9 .9 .9 .9 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 .9 .8 .8
.9 .9 .9 .8 .8 .8 .9 1.0 1.1 1.0 1.0 .9 .9 .9 1.0 1.0 1.0 1.0 1.0 1.0 1.1 1.0 1.0 1.0 1.0 1.0 1.1 1.1 1.1 1.1 1.1 1.2 1.2 1.1 1.0 .9
.8 .8 .8 .7 .7 .7 .8 .8 .8 .8 .8 .7 .7 .7 .7 .8 .7 .7 .8 .9 .9 .9 .8 .8 .8 .8 .9 .9 1.0 1.0 1.0 1.0 1.0 .9 .8 .8
.6 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .6 .6 .5 .5 .5 .5 .4 .4 .4 .5 .6 .5 .4 .4 .4 .3 .3 .3 .4 .4 .5 .6 .6 .5 .5
.5 .6 .6 .7 .7 .7 .6 .6 .6 .6 .5 .4 .4 .4 .4 .4 .3 .2 .1 .1 .1 .1 .1 .1 .1 .1 .1 .0 .0 .1 .2 .2 .3 .4 .4 .4
.5 .5 .5 .6 .6 .5 .5 .5 .5 .5 .4 .4 .4 .3 .3 .3 .2 .2 .1 .0 .0 .0 .0 .0 .0 .0 .1 .1 .2 .2 .3 .3 .3 .4 .4 .4

Figure 39. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2001

Channel: AMSUA-9 (100 hPa)

NOAA15, using all observations

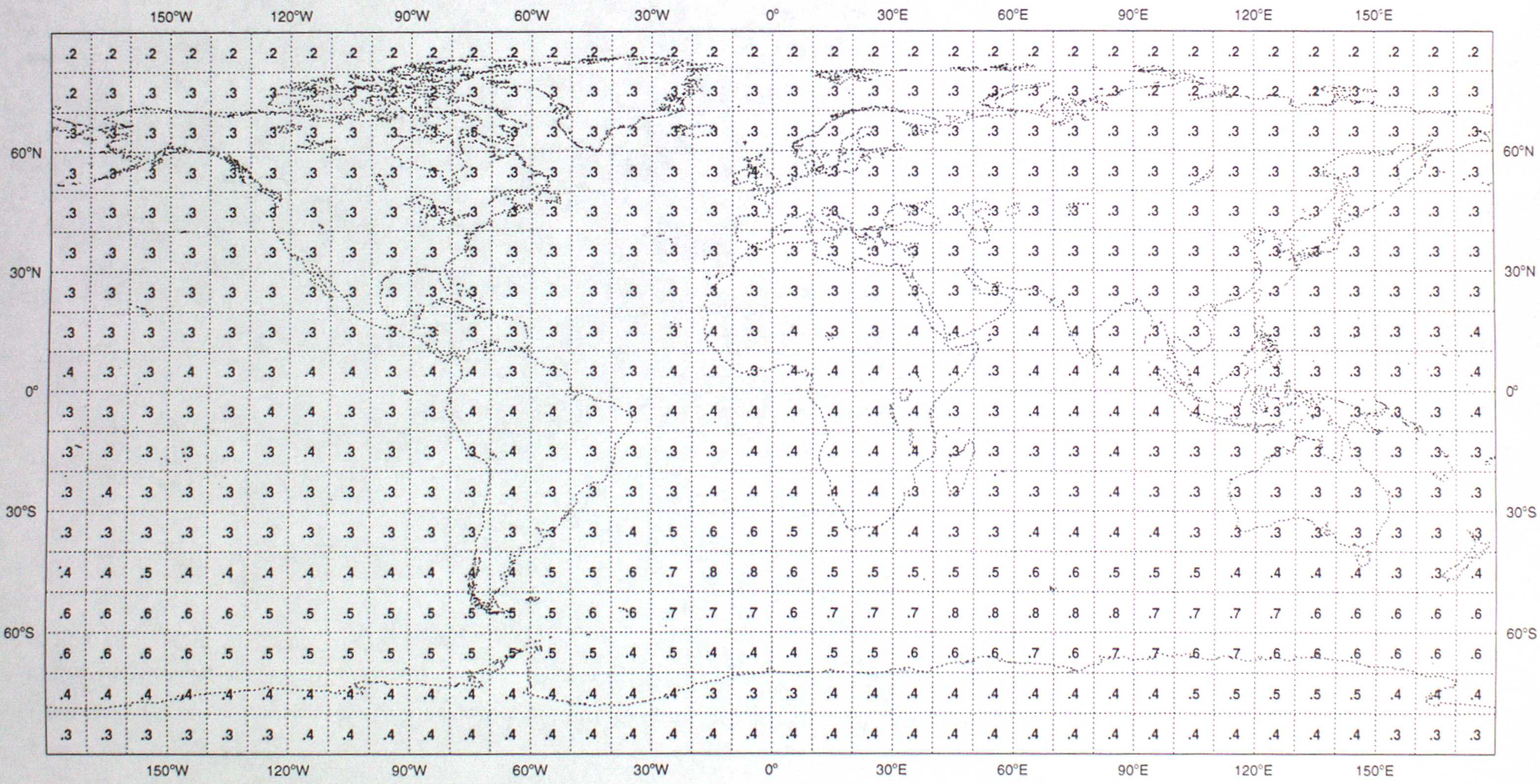
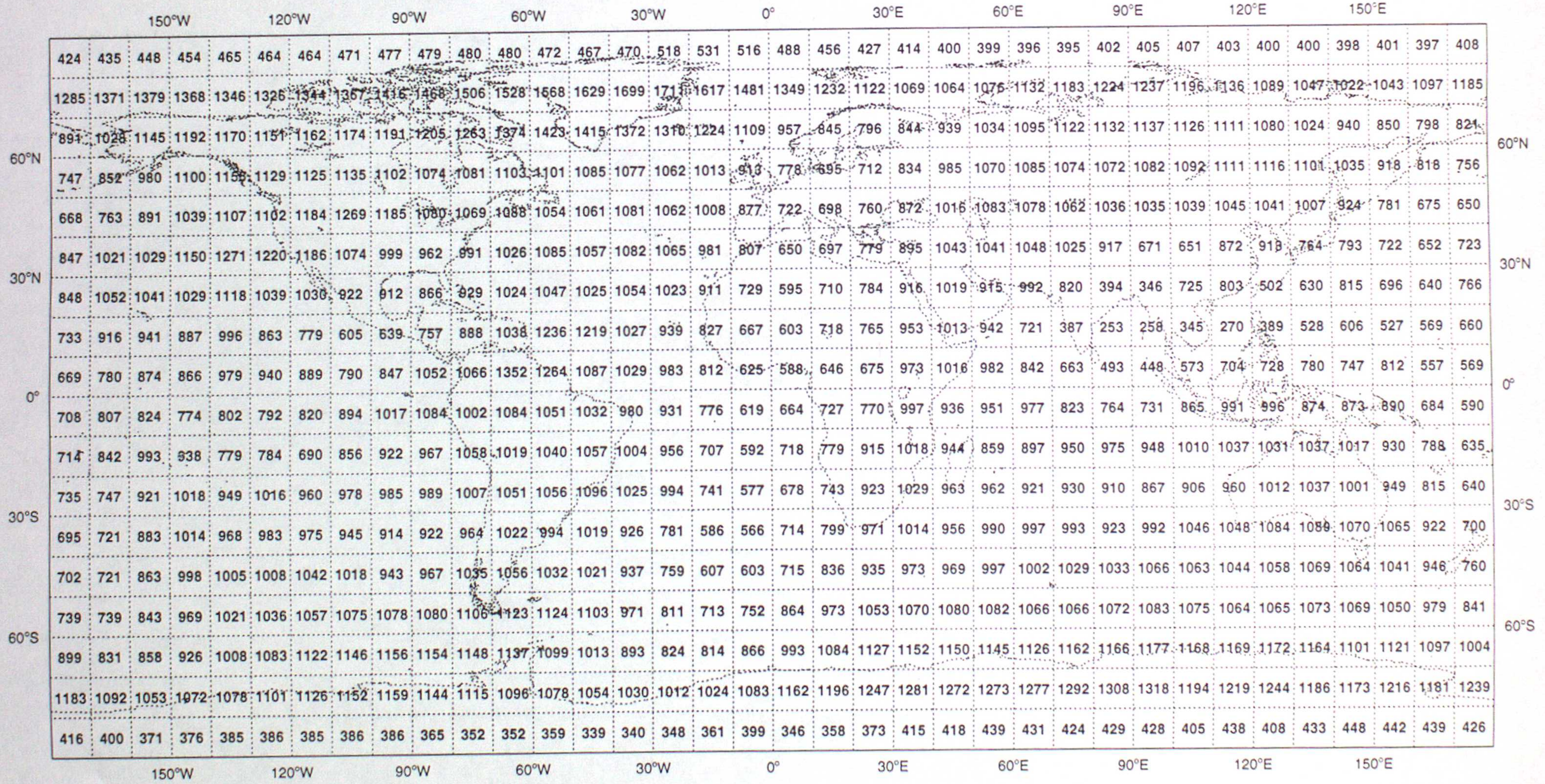
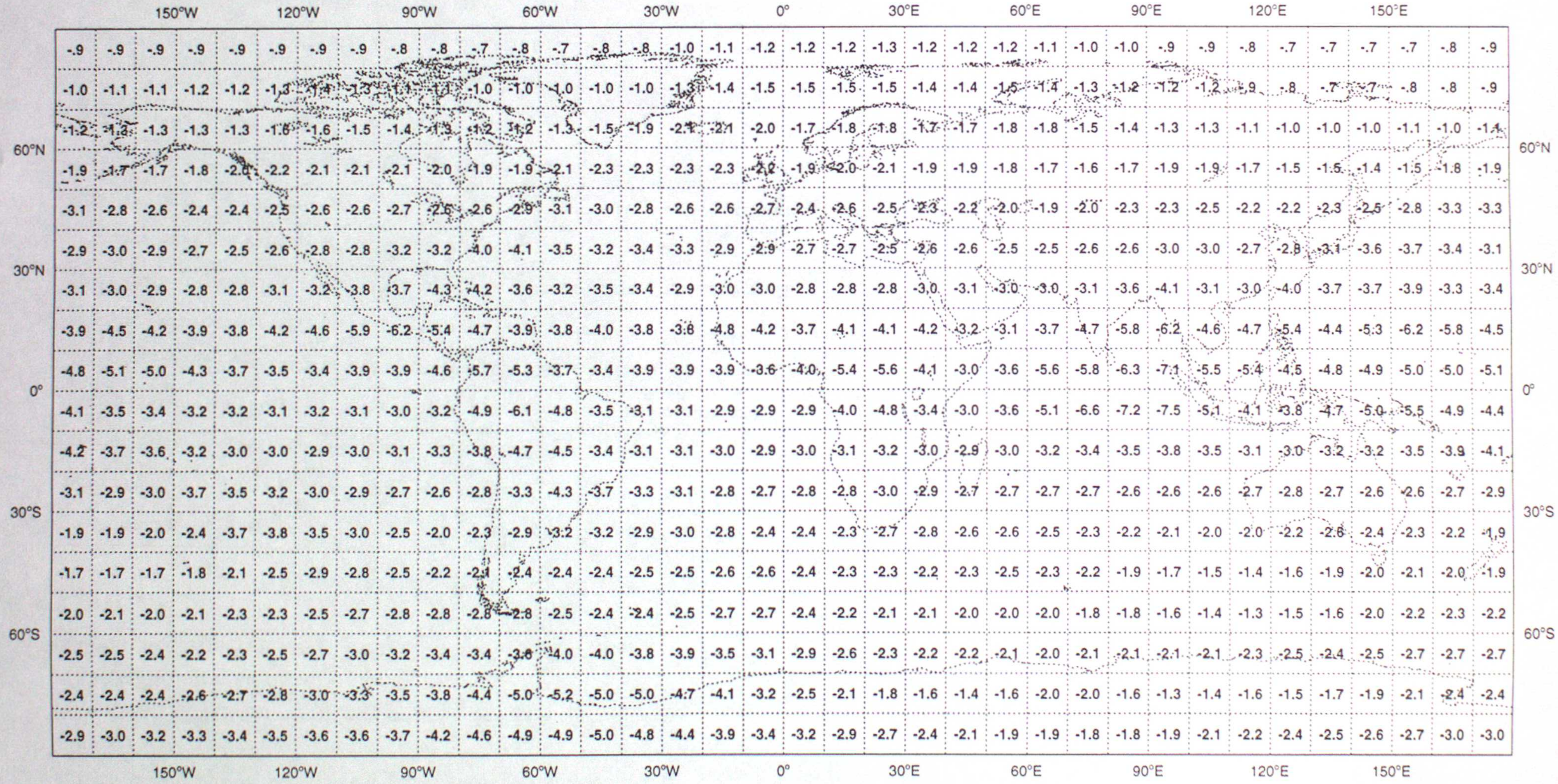

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 40. ATOVS mean daily count. SEPTEMBER 2001
NOAA16, using all observations
Global average number of observations in 24 hours = 588215



424	435	448	454	465	464	464	471	477	479	480	480	472	467	470	518	531	516	488	456	427	414	400	399	396	395	402	405	407	403	400	400	398	401	397	408
1285	1371	1379	1368	1346	1326	1344	1367	1416	1468	1506	1528	1568	1629	1699	1713	1617	1481	1349	1232	1122	1069	1064	1076	1132	1183	1224	1237	1196	1136	1089	1047	1022	1043	1097	1185
891	1028	1145	1192	1170	1151	1162	1174	1191	1205	1263	1374	1423	1415	1372	1310	1224	1109	957	845	796	844	939	1034	1095	1122	1132	1137	1126	1111	1080	1024	940	850	798	821
747	852	980	1100	1155	1129	1125	1135	1102	1074	1081	1103	1101	1085	1077	1062	1013	913	778	695	712	834	985	1070	1085	1074	1072	1082	1092	1111	1116	1101	1035	918	818	756
668	763	891	1039	1107	1102	1184	1269	1185	1080	1069	1088	1054	1061	1081	1062	1008	877	722	698	760	872	1016	1083	1078	1062	1036	1035	1039	1045	1041	1007	924	781	675	650
847	1021	1029	1150	1271	1220	1186	1074	999	962	991	1026	1085	1057	1082	1065	981	807	650	697	779	895	1043	1041	1048	1025	917	671	651	872	918	764	793	722	652	723
848	1052	1041	1029	1118	1039	1030	922	912	866	929	1024	1047	1025	1054	1023	911	729	595	710	784	916	1019	915	992	820	394	346	725	803	502	630	815	696	640	766
733	916	941	887	996	863	779	605	639	757	888	1038	1236	1219	1027	939	827	667	603	718	765	953	1013	942	721	387	253	258	345	270	389	528	606	527	569	660
669	780	874	866	979	940	889	790	847	1052	1066	1352	1264	1087	1029	983	812	625	588	646	675	973	1016	982	842	663	493	448	573	704	728	780	747	812	557	569
708	807	824	774	802	792	820	894	1017	1084	1002	1084	1051	1032	980	931	776	619	664	727	770	997	936	951	977	823	764	731	865	991	996	874	873	890	684	590
714	842	993	938	779	784	690	856	922	967	1058	1019	1040	1057	1004	956	707	592	718	779	915	1018	944	859	897	950	975	948	1010	1037	1031	1037	1017	930	788	635
735	747	921	1018	949	1016	960	978	985	989	1007	1051	1056	1096	1025	994	741	577	678	743	923	1029	963	962	921	930	910	867	906	960	1012	1037	1001	949	815	640
695	721	883	1014	968	983	975	945	914	922	964	1022	994	1019	926	781	586	566	714	799	971	1014	956	990	997	993	923	992	1046	1048	1084	1089	1070	1065	922	700
702	721	863	998	1005	1008	1042	1018	943	967	1035	1056	1032	1021	937	759	607	603	715	836	935	973	969	997	1002	1029	1033	1066	1063	1044	1058	1069	1064	1041	946	760
739	739	843	969	1021	1036	1057	1075	1078	1080	1106	1123	1124	1103	971	811	713	752	864	973	1053	1070	1080	1082	1066	1066	1072	1083	1075	1064	1065	1073	1069	1050	979	841
899	831	858	926	1008	1083	1122	1146	1156	1154	1148	1137	1099	1013	893	824	814	866	993	1084	1127	1152	1150	1145	1126	1162	1166	1177	1168	1169	1172	1164	1101	1121	1097	1004
1183	1092	1053	1072	1078	1101	1126	1152	1159	1144	1115	1096	1078	1054	1030	1012	1024	1083	1162	1196	1247	1281	1272	1273	1277	1292	1308	1318	1194	1219	1244	1186	1173	1216	1181	1239
416	400	371	376	385	386	385	386	386	365	352	352	359	339	340	348	361	399	346	358	373	415	418	439	431	424	429	428	405	438	408	433	448	442	439	426

Figure 41. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2001
Channel: HIRS8 (Surface)
NOAA16, using all observations

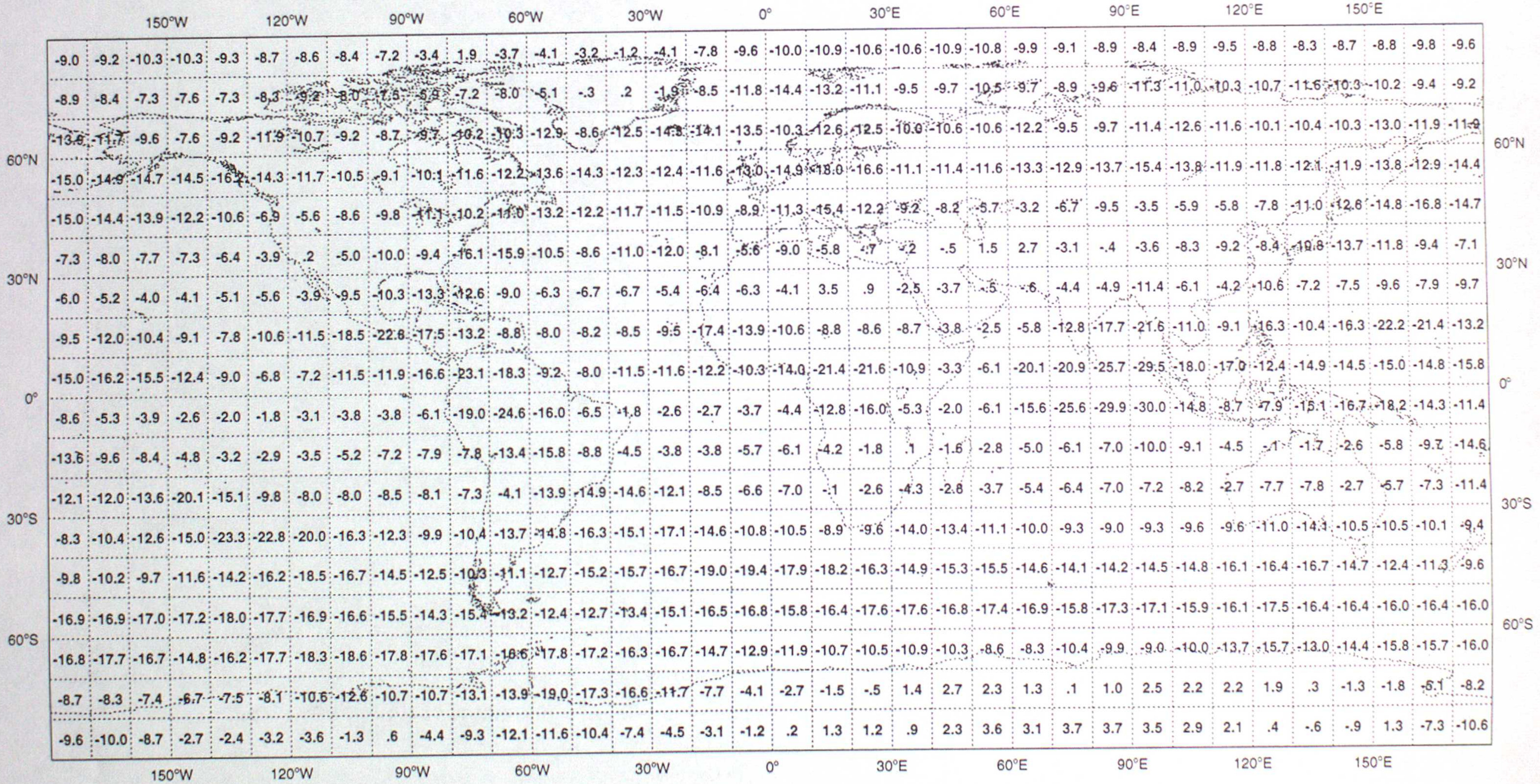


-.9	-.9	-.9	-.9	-.9	-.9	-.9	-.9	-.8	-.8	-.7	-.8	-.7	-.8	-.8	-1.0	-1.1	-1.2	-1.2	-1.2	-1.3	-1.2	-1.2	-1.2	-1.1	-1.0	-1.0	-.9	-.9	-.8	-.7	-.7	-.7	-.7	-.8	-.9
-1.0	-1.1	-1.1	-1.2	-1.2	-1.3	-1.4	-1.3	-1.1	-1.1	-1.0	-1.0	-1.0	-1.0	-1.0	-1.3	-1.4	-1.5	-1.5	-1.5	-1.5	-1.4	-1.4	-1.5	-1.4	-1.3	-1.2	-1.2	-1.2	-.9	-.8	-.7	-.7	-.8	-.8	-.9
-1.2	-1.3	-1.3	-1.3	-1.3	-1.6	-1.6	-1.5	-1.4	-1.3	-1.2	-1.2	-1.3	-1.5	-1.9	-2.1	-2.1	-2.0	-1.7	-1.8	-1.8	-1.7	-1.7	-1.8	-1.8	-1.5	-1.4	-1.3	-1.3	-1.1	-1.0	-1.0	-1.0	-1.1	-1.0	-1.4
-1.9	-1.7	-1.7	-1.8	-2.0	-2.2	-2.1	-2.1	-2.1	-2.0	-1.9	-1.9	-2.1	-2.3	-2.3	-2.3	-2.3	-2.2	-1.9	-2.0	-2.1	-1.9	-1.9	-1.8	-1.7	-1.6	-1.7	-1.9	-1.9	-1.7	-1.5	-1.5	-1.4	-1.5	-1.8	-1.9
-3.1	-2.8	-2.6	-2.4	-2.4	-2.5	-2.6	-2.6	-2.7	-2.5	-2.6	-2.9	-3.1	-3.0	-2.8	-2.6	-2.6	-2.7	-2.4	-2.6	-2.5	-2.3	-2.2	-2.0	-1.9	-2.0	-2.3	-2.3	-2.5	-2.2	-2.2	-2.3	-2.5	-2.8	-3.3	-3.3
-2.9	-3.0	-2.9	-2.7	-2.5	-2.6	-2.8	-2.8	-3.2	-3.2	-4.0	-4.1	-3.5	-3.2	-3.4	-3.3	-2.9	-2.9	-2.7	-2.7	-2.5	-2.6	-2.6	-2.5	-2.5	-2.6	-2.6	-3.0	-3.0	-2.7	-2.8	-3.1	-3.6	-3.7	-3.4	-3.1
-3.1	-3.0	-2.9	-2.8	-2.8	-3.1	-3.2	-3.8	-3.7	-4.3	-4.2	-3.6	-3.2	-3.5	-3.4	-2.9	-3.0	-3.0	-2.8	-2.8	-2.8	-3.0	-3.1	-3.0	-3.0	-3.1	-3.6	-4.1	-3.1	-3.0	-4.0	-3.7	-3.7	-3.9	-3.3	-3.4
-3.9	-4.5	-4.2	-3.9	-3.8	-4.2	-4.6	-5.9	-6.2	-5.4	-4.7	-3.9	-3.8	-4.0	-3.8	-3.8	-4.8	-4.2	-3.7	-4.1	-4.1	-4.2	-3.2	-3.1	-3.7	-4.7	-5.8	-6.2	-4.6	-4.7	-5.4	-4.4	-5.3	-6.2	-5.8	-4.5
-4.8	-5.1	-5.0	-4.3	-3.7	-3.5	-3.4	-3.9	-3.9	-4.6	-5.7	-5.3	-3.7	-3.4	-3.9	-3.9	-3.9	-3.6	-4.0	-5.4	-5.6	-4.1	-3.0	-3.6	-5.6	-5.8	-6.3	-7.1	-5.5	-5.4	-4.5	-4.8	-4.9	-5.0	-5.0	-5.1
-4.1	-3.5	-3.4	-3.2	-3.2	-3.1	-3.2	-3.1	-3.0	-3.2	-4.9	-6.1	-4.8	-3.5	-3.1	-3.1	-2.9	-2.9	-2.9	-4.0	-4.8	-3.4	-3.0	-3.6	-5.1	-6.6	-7.2	-7.5	-5.1	-4.1	-3.8	-4.7	-5.0	-5.5	-4.9	-4.4
-4.2	-3.7	-3.6	-3.2	-3.0	-3.0	-2.9	-3.0	-3.1	-3.3	-3.8	-4.7	-4.5	-3.4	-3.1	-3.1	-3.0	-2.9	-3.0	-3.1	-3.2	-3.0	-2.9	-3.0	-3.2	-3.4	-3.5	-3.8	-3.5	-3.1	-3.0	-3.2	-3.2	-3.5	-3.9	-4.1
-3.1	-2.9	-3.0	-3.7	-3.5	-3.2	-3.0	-2.9	-2.7	-2.6	-2.8	-3.3	-4.3	-3.7	-3.3	-3.1	-2.8	-2.7	-2.8	-2.8	-3.0	-2.9	-2.7	-2.7	-2.7	-2.7	-2.6	-2.6	-2.6	-2.7	-2.8	-2.7	-2.6	-2.6	-2.7	-2.9
-1.9	-1.9	-2.0	-2.4	-3.7	-3.8	-3.5	-3.0	-2.5	-2.0	-2.3	-2.9	-3.2	-3.2	-2.9	-3.0	-2.8	-2.4	-2.4	-2.3	-2.7	-2.8	-2.6	-2.6	-2.5	-2.3	-2.2	-2.1	-2.0	-2.0	-2.2	-2.6	-2.4	-2.3	-2.2	-1.9
-1.7	-1.7	-1.7	-1.8	-2.1	-2.5	-2.9	-2.8	-2.5	-2.2	-2.1	-2.4	-2.4	-2.4	-2.5	-2.5	-2.6	-2.6	-2.4	-2.3	-2.3	-2.2	-2.3	-2.5	-2.3	-2.2	-1.9	-1.7	-1.5	-1.4	-1.6	-1.9	-2.0	-2.1	-2.0	-1.9
-2.0	-2.1	-2.0	-2.1	-2.3	-2.3	-2.5	-2.7	-2.8	-2.8	-2.8	-2.8	-2.5	-2.4	-2.4	-2.5	-2.7	-2.7	-2.4	-2.2	-2.1	-2.1	-2.0	-2.0	-2.0	-1.8	-1.8	-1.6	-1.4	-1.3	-1.5	-1.6	-2.0	-2.2	-2.3	-2.2
-2.5	-2.5	-2.4	-2.2	-2.3	-2.5	-2.7	-3.0	-3.2	-3.4	-3.4	-3.6	-4.0	-4.0	-3.8	-3.9	-3.5	-3.1	-2.9	-2.6	-2.3	-2.2	-2.2	-2.1	-2.0	-2.1	-2.1	-2.1	-2.1	-2.3	-2.5	-2.4	-2.5	-2.7	-2.7	-2.7
-2.4	-2.4	-2.4	-2.6	-2.7	-2.8	-3.0	-3.3	-3.5	-3.8	-4.4	-5.0	-5.2	-5.0	-5.0	-4.7	-4.1	-3.2	-2.5	-2.1	-1.8	-1.6	-1.4	-1.6	-2.0	-2.0	-1.6	-1.3	-1.4	-1.6	-1.5	-1.7	-1.9	-2.1	-2.4	-2.4
-2.9	-3.0	-3.2	-3.3	-3.4	-3.5	-3.6	-3.6	-3.7	-4.2	-4.6	-4.9	-4.9	-5.0	-4.8	-4.4	-3.9	-3.4	-3.2	-2.9	-2.7	-2.4	-2.1	-1.9	-1.9	-1.8	-1.8	-1.9	-2.1	-2.2	-2.4	-2.5	-2.6	-2.7	-3.0	-3.0

Figure 42. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2001

Channel: HIRS8 (Surface)

NOAA16, using all observations

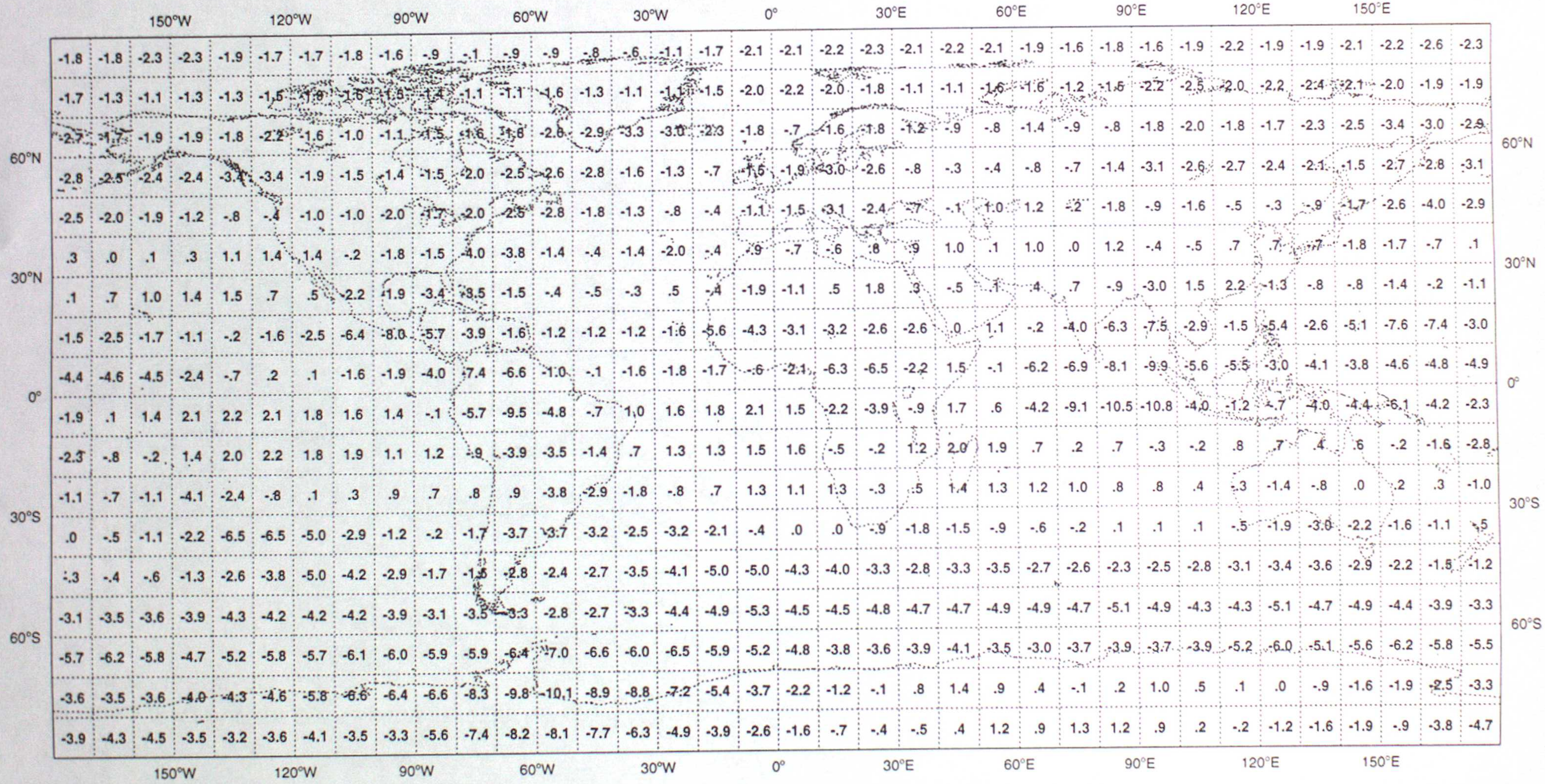


-9.0	-9.2	-10.3	-10.3	-9.3	-8.7	-8.6	-8.4	-7.2	-3.4	1.9	-3.7	-4.1	-3.2	-1.2	-4.1	-7.8	-9.6	-10.0	-10.9	-10.6	-10.6	-10.9	-10.8	-9.9	-9.1	-8.9	-8.4	-8.9	-9.5	-8.8	-8.3	-8.7	-8.8	-9.8	-9.6
-8.9	-8.4	-7.3	-7.6	-7.3	-8.3	-9.2	-8.0	-7.5	-5.9	-7.2	-8.0	-5.1	-.3	.2	-1.9	-8.5	-11.8	-14.4	-13.2	-11.1	-9.5	-9.7	-10.5	-9.7	-8.9	-9.6	-11.3	-11.0	-10.3	-10.7	-11.6	-10.3	-10.2	-9.4	-9.2
-13.6	-11.7	-9.6	-7.6	-9.2	-11.9	-10.7	-9.2	-8.7	-9.7	-10.2	-10.3	-12.9	-8.6	-12.5	-14.3	-14.1	-13.5	-10.3	-12.6	-12.5	-10.0	-10.6	-10.6	-12.2	-9.5	-9.7	-11.4	-12.6	-11.6	-10.1	-10.4	-10.3	-13.0	-11.9	-11.9
-15.0	-14.9	-14.7	-14.5	-16.2	-14.3	-11.7	-10.5	-9.1	-10.1	-11.6	-12.2	-13.6	-14.3	-12.3	-12.4	-11.6	-13.0	-14.9	-18.0	-16.6	-11.1	-11.4	-11.6	-13.3	-12.9	-13.7	-15.4	-13.8	-11.9	-11.8	-12.1	-11.9	-13.8	-12.9	-14.4
-15.0	-14.4	-13.9	-12.2	-10.6	-6.9	-5.6	-8.6	-9.8	-11.1	-10.2	-11.0	-13.2	-12.2	-11.7	-11.5	-10.9	-8.9	-11.3	-15.4	-12.2	-9.2	-8.2	-5.7	-3.2	-6.7	-9.5	-3.5	-5.9	-5.8	-7.8	-11.0	-12.6	-14.8	-16.8	-14.7
-7.3	-8.0	-7.7	-7.3	-6.4	-3.9	.2	-5.0	-10.0	-9.4	-16.1	-15.9	-10.5	-8.6	-11.0	-12.0	-8.1	-5.6	-9.0	-5.8	-.7	-.2	-.5	1.5	2.7	-3.1	-.4	-3.6	-8.3	-9.2	-8.4	-10.8	-13.7	-11.8	-9.4	-7.1
-6.0	-5.2	-4.0	-4.1	-5.1	-5.6	-3.9	-9.5	-10.3	-13.3	-12.6	-9.0	-6.3	-6.7	-6.7	-5.4	-6.4	-6.3	-4.1	3.5	.9	-2.5	-3.7	-.5	-.6	-4.4	-4.9	-11.4	-6.1	-4.2	-10.6	-7.2	-7.5	-9.6	-7.9	-9.7
-9.5	-12.0	-10.4	-9.1	-7.8	-10.6	-11.5	-18.5	-22.8	-17.5	-13.2	-8.8	-8.0	-8.2	-8.5	-9.5	-17.4	-13.9	-10.6	-8.8	-8.6	-8.7	-3.8	-2.5	-5.8	-12.8	-17.7	-21.6	-11.0	-9.1	-16.3	-10.4	-16.3	-22.2	-21.4	-13.2
-15.0	-16.2	-15.5	-12.4	-9.0	-6.8	-7.2	-11.5	-11.9	-16.6	-23.1	-18.3	-9.2	-8.0	-11.5	-11.6	-12.2	-10.3	-14.0	-21.4	-21.6	-10.9	-3.3	-6.1	-20.1	-20.9	-25.7	-29.5	-18.0	-17.0	-12.4	-14.9	-14.5	-15.0	-14.8	-15.8
-8.6	-5.3	-3.9	-2.6	-2.0	-1.8	-3.1	-3.8	-3.8	-6.1	-19.0	-24.6	-16.0	-6.5	-1.8	-2.6	-2.7	-3.7	-4.4	-12.8	-16.0	-5.3	-2.0	-6.1	-15.6	-25.6	-29.9	-30.0	-14.8	-8.7	-7.9	-15.1	-16.7	-18.2	-14.3	-11.4
-13.6	-9.6	-8.4	-4.8	-3.2	-2.9	-3.5	-5.2	-7.2	-7.9	-7.8	-13.4	-15.8	-8.8	-4.5	-3.8	-3.8	-5.7	-6.1	-4.2	-1.8	.1	-1.6	-2.8	-5.0	-6.1	-7.0	-10.0	-9.1	-4.5	-.1	-1.7	-2.6	-5.8	-9.7	-14.6
-12.1	-12.0	-13.6	-20.1	-15.1	-9.8	-8.0	-8.0	-8.5	-8.1	-7.3	-4.1	-13.9	-14.9	-14.6	-12.1	-8.5	-6.6	-7.0	-.1	-2.6	-4.3	-2.8	-3.7	-5.4	-6.4	-7.0	-7.2	-8.2	-2.7	-7.7	-7.8	-2.7	-5.7	-7.3	-11.4
-8.3	-10.4	-12.6	-15.0	-23.3	-22.8	-20.0	-16.3	-12.3	-9.9	-10.4	-13.7	-14.8	-16.3	-15.1	-17.1	-14.6	-10.8	-10.5	-8.9	-9.6	-14.0	-13.4	-11.1	-10.0	-9.3	-9.0	-9.3	-9.6	-9.6	-11.0	-14.1	-10.5	-10.5	-10.1	-9.4
-9.8	-10.2	-9.7	-11.6	-14.2	-16.2	-18.5	-16.7	-14.5	-12.5	-10.3	-11.1	-12.7	-15.2	-15.7	-16.7	-19.0	-19.4	-17.9	-18.2	-16.3	-14.9	-15.3	-15.5	-14.6	-14.1	-14.2	-14.5	-14.8	-16.1	-16.4	-16.7	-14.7	-12.4	-11.3	-9.6
-16.9	-16.9	-17.0	-17.2	-18.0	-17.7	-16.9	-16.6	-15.5	-14.3	-15.4	-13.2	-12.4	-12.7	-13.4	-15.1	-16.5	-16.8	-15.8	-16.4	-17.6	-17.6	-16.8	-17.4	-16.9	-15.8	-17.3	-17.1	-15.9	-16.1	-17.5	-16.4	-16.4	-16.0	-16.4	-16.0
-16.8	-17.7	-16.7	-14.8	-16.2	-17.7	-18.3	-18.6	-17.8	-17.6	-17.1	-16.6	-17.8	-17.2	-16.3	-16.7	-14.7	-12.9	-11.9	-10.7	-10.5	-10.9	-10.3	-8.6	-8.3	-10.4	-9.9	-9.0	-10.0	-13.7	-15.7	-13.0	-14.4	-15.8	-15.7	-16.0
-8.7	-8.3	-7.4	-6.7	-7.5	-8.1	-10.6	-12.6	-10.7	-10.7	-13.1	-13.9	-19.0	-17.3	-16.6	-11.7	-7.7	-4.1	-2.7	-1.5	-.5	1.4	2.7	2.3	1.3	.1	1.0	2.5	2.2	2.2	1.9	.3	-1.3	-1.8	-5.1	-8.2
-9.6	-10.0	-8.7	-2.7	-2.4	-3.2	-3.6	-1.3	.6	-4.4	-9.3	-12.1	-11.6	-10.4	-7.4	-4.5	-3.1	-1.2	.2	1.3	1.2	.9	2.3	3.6	3.1	3.7	3.7	3.5	2.9	2.1	.4	-.6	-.9	1.3	-7.3	-10.6

Figure 43. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2001

Channel: HIRS15 (700 hPa)

NOAA16, using all observations



-1.8	-1.8	-2.3	-2.3	-1.9	-1.7	-1.7	-1.8	-1.6	-.9	-.1	-.9	-.9	-.8	-.6	-1.1	-1.7	-2.1	-2.1	-2.2	-2.3	-2.1	-2.2	-2.1	-1.9	-1.6	-1.8	-1.6	-1.9	-2.2	-1.9	-1.9	-2.1	-2.2	-2.6	-2.3
-1.7	-1.3	-1.1	-1.3	-1.3	-1.5	-1.8	-1.6	-1.5	-1.4	-1.1	-1.1	-1.6	-1.3	-1.1	-1.1	-1.5	-2.0	-2.2	-2.0	-1.8	-1.1	-1.1	-1.6	-1.6	-1.2	-1.5	-2.2	-2.5	-2.0	-2.2	-2.4	-2.1	-2.0	-1.9	-1.9
-2.7	-1.7	-1.9	-1.9	-1.8	-2.2	-1.6	-1.0	-1.1	-1.5	-1.6	-1.8	-2.8	-2.9	-3.3	-3.0	-2.3	-1.8	-.7	-1.6	-1.8	-1.2	-.9	-.8	-1.4	-.9	-.8	-1.8	-2.0	-1.8	-1.7	-2.3	-2.5	-3.4	-3.0	-2.9
-2.8	-2.5	-2.4	-2.4	-3.4	-3.4	-1.9	-1.5	-1.4	-1.5	-2.0	-2.5	-2.6	-2.8	-1.6	-1.3	-.7	-1.5	-1.9	-3.0	-2.6	-.8	-.3	-.4	-.8	-.7	-1.4	-3.1	-2.6	-2.7	-2.4	-2.1	-1.5	-2.7	-2.8	-3.1
-2.5	-2.0	-1.9	-1.2	-.8	-.4	-1.0	-1.0	-2.0	-1.7	-2.0	-2.5	-2.8	-1.8	-1.3	-.8	-.4	-1.1	-1.5	-3.1	-2.4	-.7	-.1	1.0	1.2	-.2	-1.8	-.9	-1.6	-.5	-.3	-.9	-1.7	-2.6	-4.0	-2.9
.3	.0	.1	.3	1.1	1.4	1.4	-.2	-1.8	-1.5	-4.0	-3.8	-1.4	-.4	-1.4	-2.0	-.4	.9	-.7	-.6	.8	.9	1.0	.1	1.0	.0	1.2	-.4	-.5	.7	.7	-.7	-1.8	-1.7	-.7	.1
.1	.7	1.0	1.4	1.5	.7	.5	-2.2	-1.9	-3.4	-3.5	-1.5	-.4	-.5	-.3	.5	-.4	-1.9	-1.1	.5	1.8	.3	-.5	.1	.4	.7	-.9	-3.0	1.5	2.2	-1.3	-.8	-.8	-1.4	-.2	-1.1
-1.5	-2.5	-1.7	-1.1	-.2	-1.6	-2.5	-6.4	-8.0	-5.7	-3.9	-1.6	-1.2	-1.2	-1.2	-1.6	-5.6	-4.3	-3.1	-3.2	-2.6	-2.6	.0	1.1	-.2	-4.0	-6.3	-7.5	-2.9	-1.5	-5.4	-2.6	-5.1	-7.6	-7.4	-3.0
-4.4	-4.6	-4.5	-2.4	-.7	.2	.1	-1.6	-1.9	-4.0	-7.4	-6.6	-1.0	-.1	-1.6	-1.8	-1.7	-.6	-2.1	-6.3	-6.5	-2.2	1.5	-.1	-6.2	-6.9	-8.1	-9.9	-5.6	-5.5	-3.0	-4.1	-3.8	-4.6	-4.8	-4.9
-1.9	.1	1.4	2.1	2.2	2.1	1.8	1.6	1.4	-.1	-5.7	-9.5	-4.8	-.7	1.0	1.6	1.8	2.1	1.5	-2.2	-3.9	-.9	1.7	.6	-4.2	-9.1	-10.5	-10.8	-4.0	-1.2	-.7	-4.0	-4.4	-6.1	-4.2	-2.3
-2.3	-.8	-.2	1.4	2.0	2.2	1.8	1.9	1.1	1.2	-.9	-3.9	-3.5	-1.4	.7	1.3	1.3	1.5	1.6	-.5	-.2	1.2	2.0	1.9	.7	.2	.7	-.3	-.2	.8	.7	.4	.6	-.2	-1.6	-2.8
-1.1	-.7	-1.1	-4.1	-2.4	-.8	.1	.3	.9	.7	.8	.9	-3.8	-2.9	-1.8	-.8	.7	1.3	1.1	1.3	-.3	.5	1.4	1.3	1.2	1.0	.8	.8	.4	-.3	-1.4	-.8	.0	.2	.3	-1.0
.0	-.5	-1.1	-2.2	-6.5	-6.5	-5.0	-2.9	-1.2	-.2	-1.7	-3.7	-3.7	-3.2	-2.5	-3.2	-2.1	-.4	.0	.0	-.9	-1.8	-1.5	-.9	-.6	-.2	.1	.1	.1	-.5	-1.9	-3.0	-2.2	-1.6	-1.1	.5
-.3	-.4	-.6	-1.3	-2.6	-3.8	-5.0	-4.2	-2.9	-1.7	-1.5	-2.8	-2.4	-2.7	-3.5	-4.1	-5.0	-5.0	-4.3	-4.0	-3.3	-2.8	-3.3	-3.5	-2.7	-2.6	-2.3	-2.5	-2.8	-3.1	-3.4	-3.6	-2.9	-2.2	-1.5	-1.2
-3.1	-3.5	-3.6	-3.9	-4.3	-4.2	-4.2	-4.2	-3.9	-3.1	-3.5	-3.3	-2.8	-2.7	-3.3	-4.4	-4.9	-5.3	-4.5	-4.5	-4.8	-4.7	-4.7	-4.9	-4.9	-4.7	-5.1	-4.9	-4.3	-4.3	-5.1	-4.7	-4.9	-4.4	-3.9	-3.3
-5.7	-6.2	-5.8	-4.7	-5.2	-5.8	-5.7	-6.1	-6.0	-5.9	-5.9	-6.4	-7.0	-6.6	-6.0	-6.5	-5.9	-5.2	-4.8	-3.8	-3.6	-3.9	-4.1	-3.5	-3.0	-3.7	-3.9	-3.7	-3.9	-5.2	-6.0	-5.1	-5.6	-6.2	-5.8	-5.5
-3.6	-3.5	-3.6	-4.0	-4.3	-4.6	-5.8	-6.6	-6.4	-6.6	-8.3	-9.8	-10.1	-8.9	-8.8	-7.2	-5.4	-3.7	-2.2	-1.2	-.1	.8	1.4	.9	.4	-.1	.2	1.0	.5	.1	.0	-.9	-1.6	-1.9	-2.5	-3.3
-3.9	-4.3	-4.5	-3.5	-3.2	-3.6	-4.1	-3.5	-3.3	-5.6	-7.4	-8.2	-8.1	-7.7	-6.3	-4.9	-3.9	-2.6	-1.6	-.7	-.4	-.5	.4	1.2	.9	1.3	1.2	.9	.2	-.2	-1.2	-1.6	-1.9	-.9	-3.8	-4.7

Figure 44. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2001

Channel: HIRS15 (700 hPa)

NOAA16, using all observations

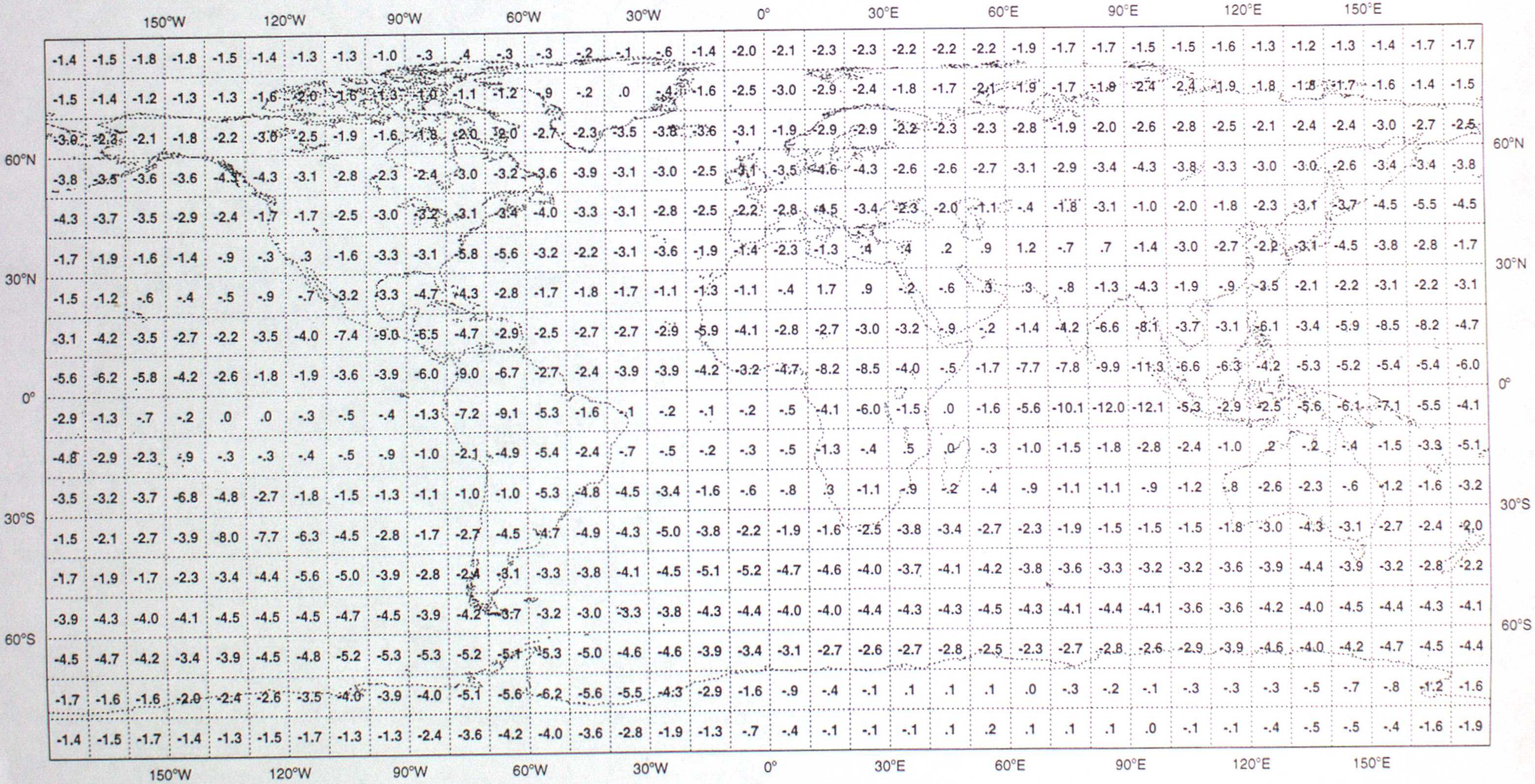
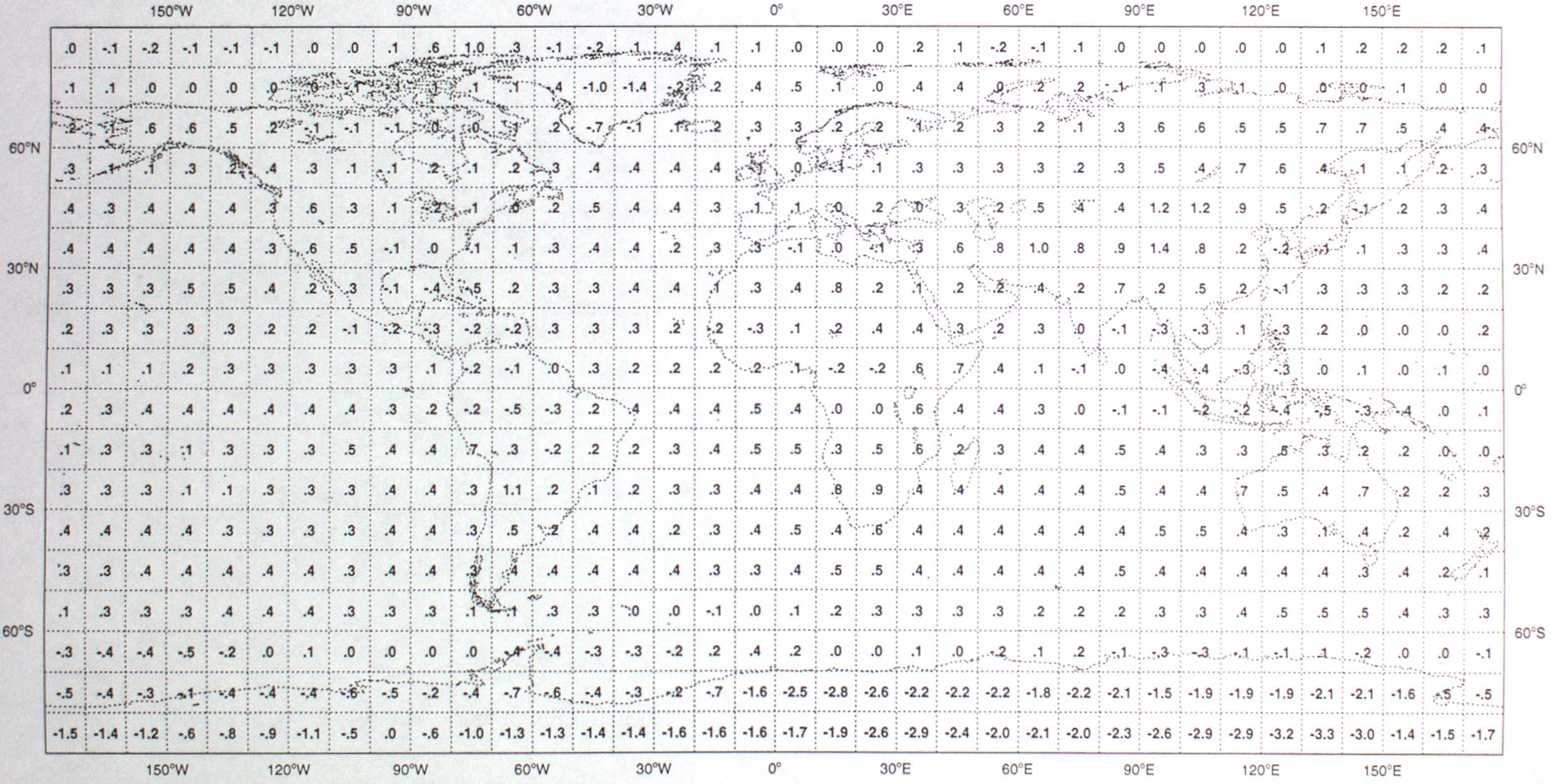

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-1.4 -1.5 -1.8 -1.8 -1.5 -1.4 -1.3 -1.3 -1.0 -.3 .4 -.3 -.3 -.2 -.1 -.6 -1.4 -2.0 -2.1 -2.3 -2.3 -2.2 -2.2 -2.2 -1.9 -1.7 -1.7 -1.5 -1.5 -1.6 -1.3 -1.2 -1.3 -1.4 -1.7 -1.7
-1.5 -1.4 -1.2 -1.3 -1.3 -1.6 -2.0 -1.6 -1.3 -1.0 -1.1 -1.2 -.9 -.2 .0 -.4 -1.6 -2.5 -3.0 -2.9 -2.4 -1.8 -1.7 -2.1 -1.9 -1.7 -1.9 -2.4 -2.4 -1.9 -1.8 -1.8 -1.7 -1.6 -1.4 -1.5
-3.0 -2.3 -2.1 -1.8 -2.2 -3.0 -2.5 -1.9 -1.6 -1.8 -2.0 -2.0 -2.7 -2.3 -3.5 -3.8 -3.6 -3.1 -1.9 -2.9 -2.9 -2.2 -2.3 -2.3 -2.8 -1.9 -2.0 -2.6 -2.8 -2.5 -2.1 -2.4 -2.4 -3.0 -2.7 -2.5
-3.8 -3.5 -3.6 -3.6 -4.3 -4.3 -3.1 -2.8 -2.3 -2.4 -3.0 -3.2 -3.6 -3.9 -3.1 -3.0 -2.5 -3.1 -3.5 -4.6 -4.3 -2.6 -2.6 -2.7 -3.1 -2.9 -3.4 -4.3 -3.8 -3.3 -3.0 -3.0 -2.6 -3.4 -3.4 -3.8
-4.3 -3.7 -3.5 -2.9 -2.4 -1.7 -1.7 -2.5 -3.0 -3.2 -3.1 -3.4 -4.0 -3.3 -3.1 -2.8 -2.5 -2.2 -2.8 -4.5 -3.4 -2.3 -2.0 -1.1 -.4 -1.8 -3.1 -1.0 -2.0 -1.8 -2.3 -3.1 -3.7 -4.5 -5.5 -4.5
-1.7 -1.9 -1.6 -1.4 -.9 -.3 .3 -1.6 -3.3 -3.1 -5.8 -5.6 -3.2 -2.2 -3.1 -3.6 -1.9 -1.4 -2.3 -1.3 .4 .4 .2 .9 1.2 -.7 .7 -1.4 -3.0 -2.7 -2.2 -3.1 -4.5 -3.8 -2.8 -1.7
-1.5 -1.2 -.6 -.4 -.5 -.9 -.7 -3.2 -3.3 -4.7 -4.3 -2.8 -1.7 -1.8 -1.7 -1.1 -1.3 -1.1 -.4 1.7 .9 -.2 -.6 .3 .3 -.8 -1.3 -4.3 -1.9 -.9 -3.5 -2.1 -2.2 -3.1 -2.2 -3.1
-3.1 -4.2 -3.5 -2.7 -2.2 -3.5 -4.0 -7.4 -9.0 -6.5 -4.7 -2.9 -2.5 -2.7 -2.7 -2.9 -5.9 -4.1 -2.8 -2.7 -3.0 -3.2 -.9 -.2 -1.4 -4.2 -6.6 -8.1 -3.7 -3.1 -6.1 -3.4 -5.9 -8.5 -8.2 -4.7
-5.6 -6.2 -5.8 -4.2 -2.6 -1.8 -1.9 -3.6 -3.9 -6.0 -9.0 -6.7 -2.7 -2.4 -3.9 -3.9 -4.2 -3.2 -4.7 -8.2 -8.5 -4.0 -.5 -1.7 -7.7 -7.8 -9.9 -11.3 -6.6 -6.3 -4.2 -5.3 -5.2 -5.4 -5.4 -6.0
-2.9 -1.3 -.7 -.2 .0 .0 -.3 -.5 -.4 -1.3 -7.2 -9.1 -5.3 -1.6 -.1 -.2 -.1 -.2 -.5 -4.1 -6.0 -1.5 .0 -1.6 -5.6 -10.1 -12.0 -12.1 -5.3 -2.9 -2.5 -5.6 -6.1 -7.1 -5.5 -4.1
-4.8 -2.9 -2.3 -.9 -.3 -.3 -.4 -.5 -.9 -1.0 -2.1 -4.9 -5.4 -2.4 -.7 -.5 -.2 -.3 -.5 -1.3 -.4 .5 .0 -.3 -1.0 -1.5 -1.8 -2.8 -2.4 -1.0 .2 -.2 -.4 -1.5 -3.3 -5.1
-3.5 -3.2 -3.7 -6.8 -4.8 -2.7 -1.8 -1.5 -1.3 -1.1 -1.0 -1.0 -5.3 -4.8 -4.5 -3.4 -1.6 -.6 -.8 .3 -1.1 -.9 -.2 -.4 -.9 -1.1 -1.1 -.9 -1.2 -.8 -2.6 -2.3 -.6 -1.2 -1.6 -3.2
-1.5 -2.1 -2.7 -3.9 -8.0 -7.7 -6.3 -4.5 -2.8 -1.7 -2.7 -4.5 -4.7 -4.9 -4.3 -5.0 -3.8 -2.2 -1.9 -1.6 -2.5 -3.8 -3.4 -2.7 -2.3 -1.9 -1.5 -1.5 -1.5 -1.8 -3.0 -4.3 -3.1 -2.7 -2.4 -2.0
-1.7 -1.9 -1.7 -2.3 -3.4 -4.4 -5.6 -5.0 -3.9 -2.8 -2.4 -3.1 -3.3 -3.8 -4.1 -4.5 -5.1 -5.2 -4.7 -4.6 -4.0 -3.7 -4.1 -4.2 -3.8 -3.6 -3.3 -3.2 -3.2 -3.6 -3.9 -4.4 -3.9 -3.2 -2.8 -2.2
-3.9 -4.3 -4.0 -4.1 -4.5 -4.5 -4.5 -4.7 -4.5 -3.9 -4.2 -3.7 -3.2 -3.0 -3.3 -3.8 -4.3 -4.4 -4.0 -4.0 -4.4 -4.3 -4.3 -4.5 -4.3 -4.1 -4.4 -4.1 -3.6 -3.6 -4.2 -4.0 -4.5 -4.4 -4.3 -4.1
-4.5 -4.7 -4.2 -3.4 -3.9 -4.5 -4.8 -5.2 -5.3 -5.3 -5.2 -5.1 -5.3 -5.0 -4.6 -4.6 -3.9 -3.4 -3.1 -2.7 -2.6 -2.7 -2.8 -2.5 -2.3 -2.7 -2.8 -2.6 -2.9 -3.9 -4.6 -4.0 -4.2 -4.7 -4.5 -4.4
-1.7 -1.6 -1.6 -2.0 -2.4 -2.6 -3.5 -4.0 -3.9 -4.0 -5.1 -5.6 -6.2 -5.6 -5.5 -4.3 -2.9 -1.6 -.9 -.4 -.1 .1 .1 .1 .0 -.3 -.2 -.1 -.3 -.3 -.3 -.5 -.7 -.8 -1.2 -1.6
-1.4 -1.5 -1.7 -1.4 -1.3 -1.5 -1.7 -1.3 -1.3 -2.4 -3.6 -4.2 -4.0 -3.6 -2.8 -1.9 -1.3 -.7 -.4 -.1 -.1 -.1 .1 .2 .1 .1 .1 .0 -.1 -.1 -.4 -.5 -.5 -.4 -1.6 -1.9

Figure 45. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2001
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations

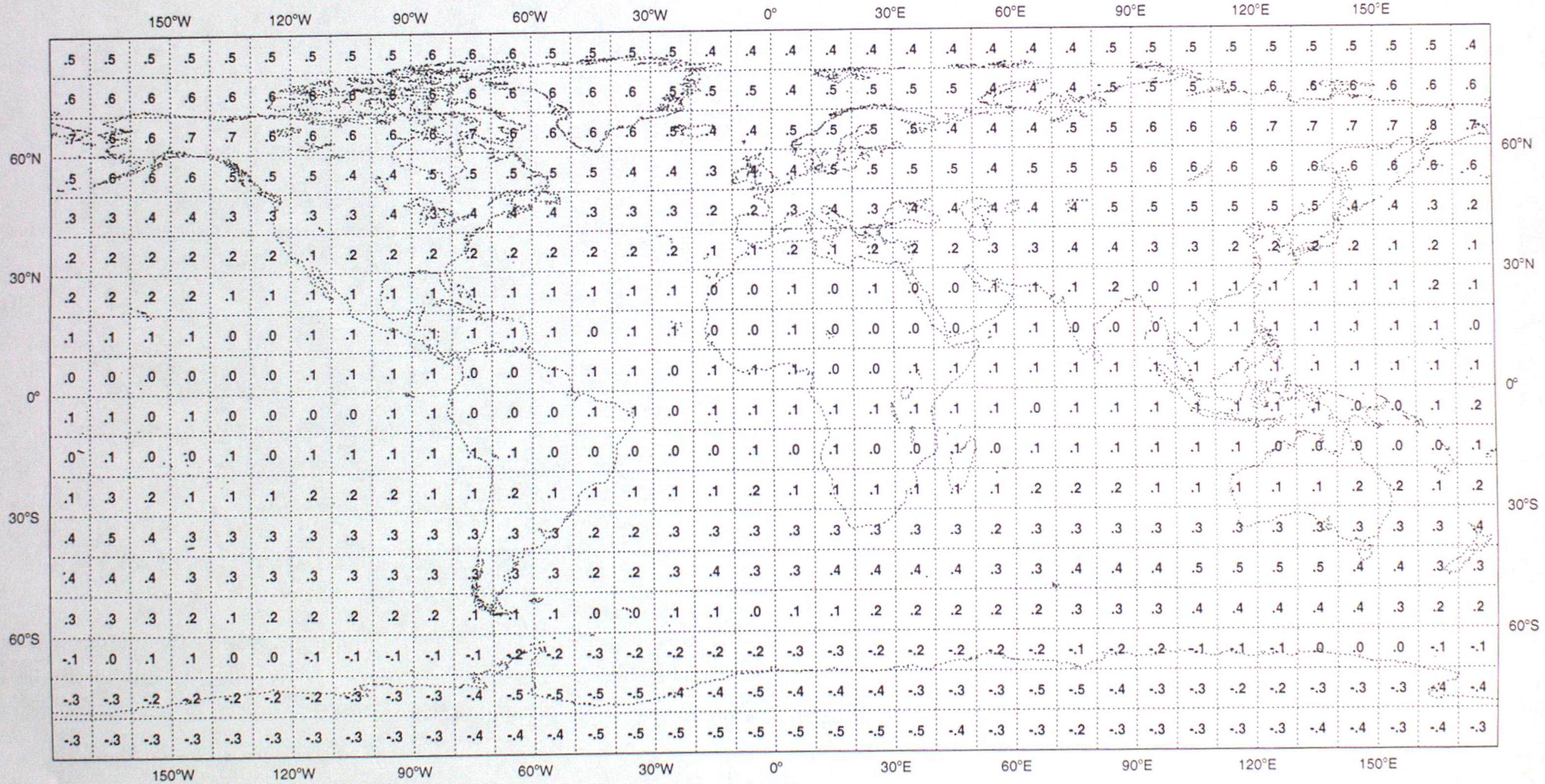


.0	-.1	-.2	-.1	-.1	-.1	.0	.0	.1	.6	1.0	.3	-.1	-.2	.1	.4	.1	.1	.0	.0	.0	.2	.1	-.2	-.1	.1	.0	.0	.0	.0	.0	.1	.2	.2	.2	.1
.1	.1	.0	.0	.0	.0	.0	.1	.1	.1	.1	.1	.4	-1.0	-1.4	-.2	.2	.4	.5	.1	.0	.4	.4	.0	.2	.2	-.1	.1	.3	.1	.0	.0	.0	.1	.0	.0
.2	.1	.6	.6	.5	.2	-.1	-.1	-.1	.0	.0	.1	.2	-.7	-.1	.1	.2	.3	.3	.2	.2	.1	.2	.3	.2	.1	.3	.6	.6	.5	.5	.7	.7	.5	.4	.4
.3	.1	.1	.3	.2	.4	.3	.1	.1	.2	.1	.2	.3	.4	.4	.4	.4	.1	.0	-.1	.1	.3	.3	.3	.3	.2	.3	.5	.4	.7	.6	.4	.1	.1	.2	.3
.4	.3	.4	.4	.4	.3	.6	.3	.1	-.2	.1	.0	.2	.5	.4	.4	.3	.1	.1	.0	.2	.0	.3	.2	.5	.4	.4	1.2	1.2	.9	.5	.2	-.1	.2	.3	.4
.4	.4	.4	.4	.4	.3	.6	.5	-.1	.0	.1	.1	.3	.4	.4	.2	.3	.3	-.1	.0	-.1	.3	.6	.8	1.0	.8	.9	1.4	.8	.2	-.2	-.1	.1	.3	.3	.4
.3	.3	.3	.5	.5	.4	.2	.3	-.1	-.4	-.5	.2	.3	.3	.4	.4	.1	.3	.4	.8	.2	.1	.2	.2	.4	.2	.7	.2	.5	.2	-.1	.3	.3	.3	.2	.2
.2	.3	.3	.3	.3	.2	.2	-.1	-.2	-.3	-.2	-.2	.3	.3	.3	.2	-.2	-.3	.1	.2	.4	.4	.3	.2	.3	.0	-.1	-.3	-.3	.1	-.3	.2	.0	.0	.0	.2
.1	.1	.1	.2	.3	.3	.3	.3	.3	.1	-.2	-.1	.0	.3	.2	.2	.2	.2	.1	-.2	-.2	.6	.7	.4	.1	-.1	.0	-.4	-.4	-.3	-.3	.0	.1	.0	.1	.0
.2	.3	.4	.4	.4	.4	.4	.4	.3	.2	-.2	-.5	-.3	.2	.4	.4	.4	.5	.4	.0	.0	.6	.4	.4	.3	.0	-.1	-.1	-.2	-.2	-.4	-.5	-.3	-.4	.0	.1
.1	.3	.3	.1	.3	.3	.3	.5	.4	.4	.7	.3	-.2	.2	.2	.3	.4	.5	.5	.3	.5	.6	.2	.3	.4	.4	.5	.4	.3	.3	.5	.3	.2	.2	.0	.0
.3	.3	.3	.1	.1	.3	.3	.3	.4	.4	.3	1.1	.2	.1	.2	.3	.3	.4	.4	.8	.9	.4	.4	.4	.4	.4	.5	.4	.4	.7	.5	.4	.7	.2	.2	.3
.4	.4	.4	.4	.3	.3	.3	.3	.4	.4	.3	.5	.2	.4	.4	.2	.3	.4	.5	.4	.6	.4	.4	.4	.4	.4	.4	.5	.5	.4	.3	.1	.4	.2	.4	.2
.3	.3	.4	.4	.4	.4	.4	.3	.4	.4	.3	.4	.4	.4	.4	.4	.3	.3	.4	.5	.5	.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.3	.4	.2	.1
.1	.3	.3	.3	.4	.4	.4	.3	.3	.3	.1	.1	.3	.3	.0	.0	-.1	.0	.1	.2	.3	.3	.3	.3	.2	.2	.2	.3	.3	.4	.5	.5	.5	.4	.3	.3
-.3	-.4	-.4	-.5	-.2	.0	.1	.0	.0	.0	.0	-.4	-.4	-.3	-.3	-.2	.2	.4	.2	.0	.0	.1	.0	-.2	.1	.2	-.1	-.3	-.3	-.1	-.1	.1	-.2	.0	.0	-.1
-.5	-.4	-.3	-.1	-.4	-.4	-.4	-.6	-.5	-.2	-.4	-.7	-.6	-.4	-.3	-.2	-.7	-1.6	-2.5	-2.8	-2.6	-2.2	-2.2	-2.2	-1.8	-2.2	-2.1	-1.5	-1.9	-1.9	-1.9	-2.1	-2.1	-1.6	-.5	-.5
-1.5	-1.4	-1.2	-.6	-.8	-.9	-1.1	-.5	.0	-.6	-1.0	-1.3	-1.3	-1.4	-1.4	-1.6	-1.6	-1.6	-1.7	-1.9	-2.6	-2.9	-2.4	-2.0	-2.1	-2.0	-2.3	-2.6	-2.9	-2.9	-3.2	-3.3	-3.0	-1.4	-1.5	-1.7

Figure 46. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2001

Channel: HIRS11 (500 - 700 hPa)

NOAA16, using all observations

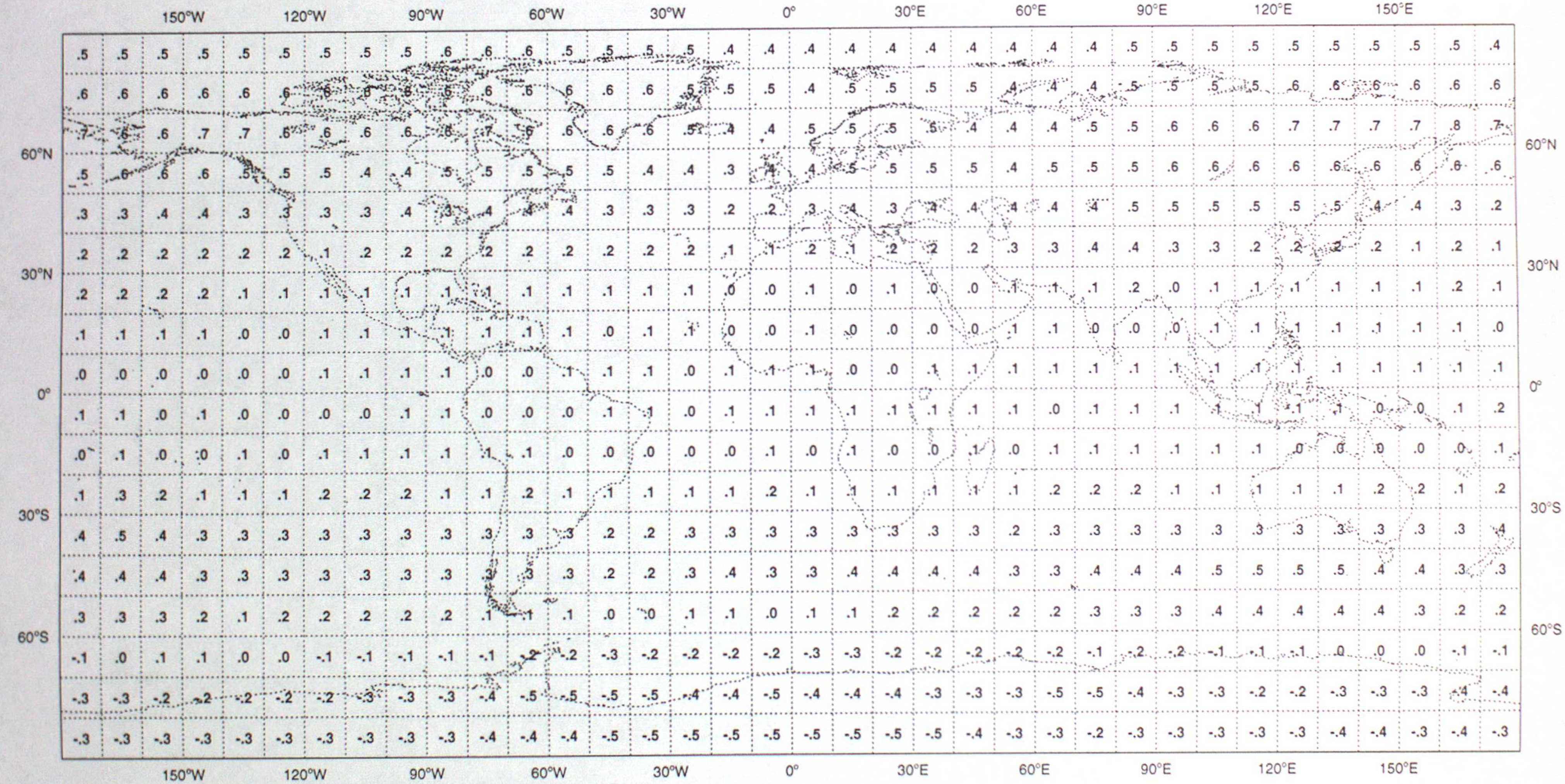


.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4
.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.5	.5	.5	.4	.5	.5	.5	.5	.4	.4	.4	.5	.5	.5	.5	.6	.6	.6	.6	.6	.6
.7	.6	.6	.7	.7	.6	.6	.6	.6	.6	.7	.6	.6	.6	.6	.5	.4	.4	.5	.5	.5	.5	.4	.4	.4	.5	.5	.6	.6	.6	.7	.7	.7	.7	.8	.7
.5	.6	.6	.6	.5	.5	.5	.4	.4	.5	.5	.5	.5	.5	.4	.4	.3	.4	.4	.5	.5	.5	.5	.4	.5	.5	.5	.6	.6	.6	.6	.6	.6	.6	.6	.6
.3	.3	.4	.4	.3	.3	.3	.3	.4	.3	.4	.4	.4	.3	.3	.3	.2	.2	.3	.4	.3	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.4	.4	.3	.2
.2	.2	.2	.2	.2	.2	.1	.2	.2	.2	.2	.2	.2	.2	.2	.2	.1	.1	.2	.1	.2	.2	.2	.3	.3	.4	.4	.3	.3	.2	.2	.2	.2	.1	.2	.1
.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.0	.0	.1	.0	.1	.0	.0	.1	.1	.1	.2	.0	.1	.1	.1	.1	.1	.1	.2	.1
.1	.1	.1	.1	.0	.0	.1	.1	.1	.1	.1	.1	.1	.0	.1	.1	.0	.0	.1	.0	.0	.0	.0	.1	.1	.0	.0	.0	.1	.1	.1	.1	.1	.1	.1	.0
.0	.0	.0	.0	.0	.0	.1	.1	.1	.1	.0	.0	.1	.1	.1	.0	.1	.1	.1	.0	.0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
.1	.1	.0	.1	.0	.0	.0	.0	.1	.1	.0	.0	.0	.1	.1	.0	.1	.1	.1	.1	.1	.1	.1	.1	.0	.1	.1	.1	.1	.1	.1	.1	.0	.0	.1	.2
.0	.1	.0	.0	.1	.0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0	.1	.0	.1	.0	.0	.1	.0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0	.1
.1	.3	.2	.1	.1	.1	.2	.2	.2	.1	.1	.2	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.2	.2	.2	.1	.1	.1	.1	.1	.2	.2	.1	.2
.4	.5	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2	.3	.3	.3	.3	.3	.3	.3	.3	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4
.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2	.3	.4	.3	.3	.4	.4	.4	.4	.3	.3	.4	.4	.4	.5	.5	.5	.5	.4	.4	.3	.3
.3	.3	.3	.2	.1	.2	.2	.2	.2	.2	.1	.1	.1	.0	.0	.1	.1	.0	.1	.1	.2	.2	.2	.2	.2	.3	.3	.3	.4	.4	.4	.4	.4	.3	.2	.2
-.1	.0	.1	.1	.0	.0	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.3	-.2	-.2	-.2	-.2	-.3	-.3	-.2	-.2	-.2	-.2	-.2	-.1	-.2	-.2	-.1	-.1	-.1	.0	.0	.0	-.1	-.1
-.3	-.3	-.2	-.2	-.2	-.2	-.2	-.3	-.3	-.3	-.4	-.5	-.5	-.5	-.5	-.4	-.4	-.5	-.4	-.4	-.4	-.3	-.3	-.3	-.5	-.5	-.4	-.3	-.3	-.2	-.2	-.3	-.3	-.3	-.4	-.4
-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.4	-.3	-.3	-.2	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.3	-.4	-.3

Figure 47. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2001

Channel: HIRS4 (400 hPa)

NOAA16, using all observations

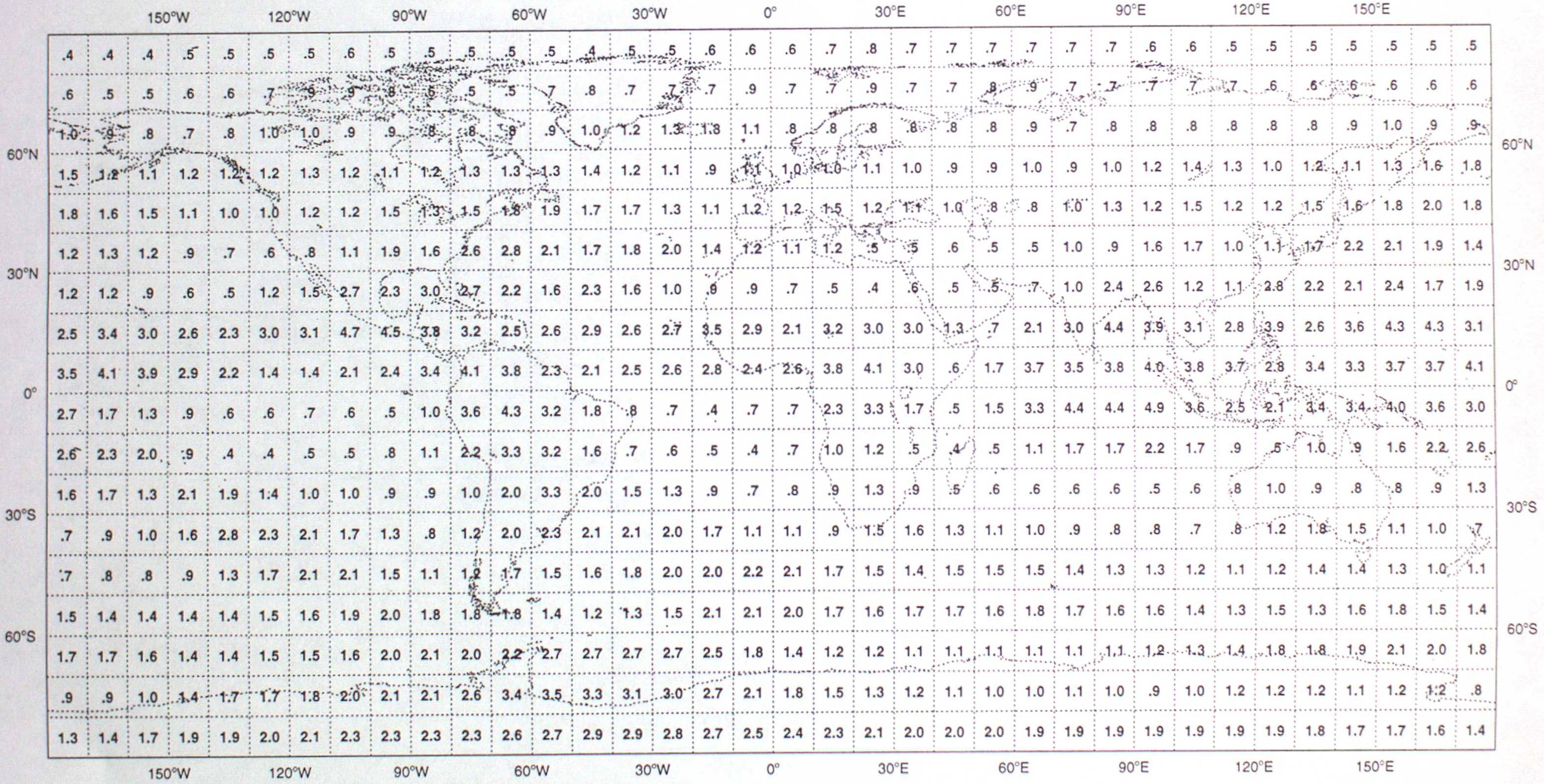


.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4
.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.5	.5	.5	.4	.5	.5	.5	.5	.4	.4	.4	.5	.5	.5	.5	.6	.6	.6	.6	.6	.6
.7	.6	.6	.7	.7	.6	.6	.6	.6	.6	.7	.6	.6	.6	.6	.5	.4	.4	.5	.5	.5	.5	.4	.4	.4	.5	.5	.6	.6	.6	.7	.7	.7	.7	.8	.7
.5	.6	.6	.6	.5	.5	.5	.4	.4	.5	.5	.5	.5	.5	.4	.4	.3	.4	.4	.5	.5	.5	.5	.4	.5	.5	.5	.6	.6	.6	.6	.6	.6	.6	.6	.6
.3	.3	.4	.4	.3	.3	.3	.3	.4	.3	.4	.4	.4	.3	.3	.3	.2	.2	.3	.4	.3	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.4	.4	.3	.2
.2	.2	.2	.2	.2	.2	.1	.2	.2	.2	.2	.2	.2	.2	.2	.2	.1	.1	.2	.1	.2	.2	.2	.3	.3	.4	.4	.3	.3	.2	.2	.2	.2	.1	.2	.1
.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.0	.0	.1	.0	.1	.0	.0	.1	.1	.1	.2	.0	.1	.1	.1	.1	.1	.1	.2	.1
.1	.1	.1	.1	.0	.0	.1	.1	.1	.1	.1	.1	.1	.0	.1	.1	.0	.0	.1	.0	.0	.0	.0	.1	.1	.0	.0	.0	.1	.1	.1	.1	.1	.1	.1	.0
.0	.0	.0	.0	.0	.0	.1	.1	.1	.1	.0	.0	.1	.1	.1	.0	.1	.1	.1	.0	.0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
.1	.1	.0	.1	.0	.0	.0	.0	.1	.1	.0	.0	.0	.1	.1	.0	.1	.1	.1	.1	.1	.1	.1	.1	.0	.1	.1	.1	.1	.1	.1	.1	.0	.0	.1	.2
.0	.1	.0	.0	.1	.0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0	.1	.0	.1	.0	.0	.1	.0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0	.1
.1	.3	.2	.1	.1	.1	.2	.2	.2	.1	.1	.2	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.2	.2	.2	.1	.1	.1	.1	.1	.2	.2	.1	.2
.4	.5	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2	.3	.3	.3	.3	.3	.3	.3	.3	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4
.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2	.3	.4	.3	.3	.4	.4	.4	.4	.3	.3	.4	.4	.4	.5	.5	.5	.5	.4	.4	.3	.3
.3	.3	.3	.2	.1	.2	.2	.2	.2	.2	.1	.1	.1	.0	.0	.1	.1	.0	.1	.1	.2	.2	.2	.2	.2	.3	.3	.3	.4	.4	.4	.4	.4	.3	.2	.2
-.1	.0	.1	.1	.0	.0	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.3	-.2	-.2	-.2	-.2	-.3	-.3	-.2	-.2	-.2	-.2	-.2	-.1	-.2	-.2	-.1	-.1	-.1	.0	.0	.0	-.1	-.1
-.3	-.3	-.2	-.2	-.2	-.2	-.2	-.3	-.3	-.3	-.4	-.5	-.5	-.5	-.5	-.4	-.4	-.5	-.4	-.4	-.4	-.3	-.3	-.3	-.5	-.5	-.4	-.3	-.3	-.2	-.2	-.3	-.3	-.3	-.4	-.4
-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.4	-.3	-.3	-.2	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.3	-.4	-.3

Figure 48. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2001

Channel: HIRS4 (400 hPa)

NOAA16, using all observations

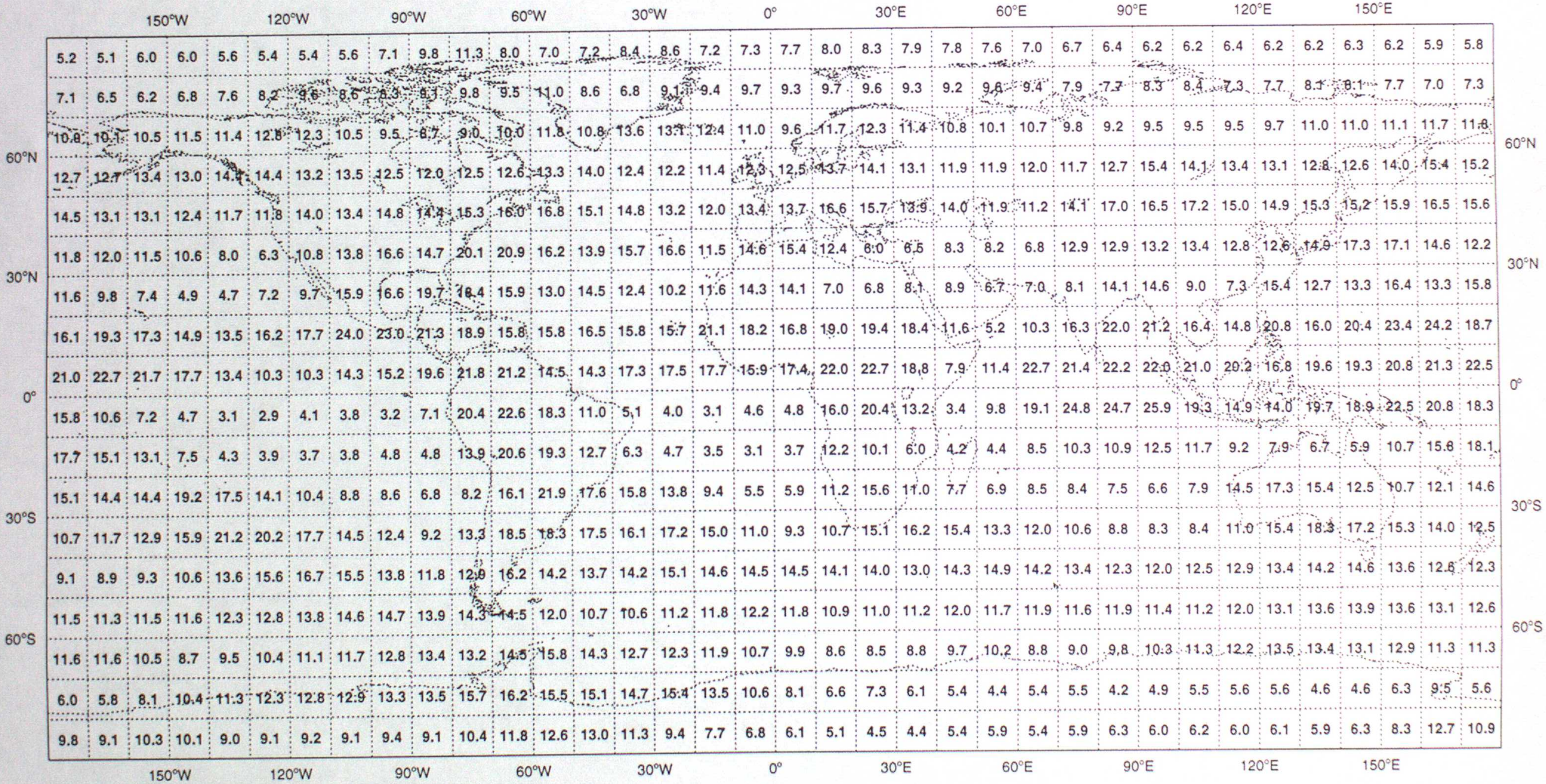


.4	.4	.4	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.4	.5	.5	.6	.6	.6	.7	.8	.7	.7	.7	.7	.7	.7	.6	.6	.5	.5	.5	.5	.5	.5	.5
.6	.5	.5	.6	.6	.7	.9	.9	.8	.5	.5	.5	.7	.8	.7	.7	.7	.9	.7	.7	.9	.7	.7	.8	.9	.7	.7	.7	.7	.7	.6	.6	.6	.6	.6	.6
1.0	.9	.8	.7	.8	1.0	1.0	.9	.9	.8	.8	.8	.9	1.0	1.2	1.3	1.8	1.1	.8	.8	.8	.8	.8	.8	.9	.7	.8	.8	.8	.8	.8	.8	.9	1.0	.9	.9
1.5	1.2	1.1	1.2	1.2	1.2	1.3	1.2	1.1	1.2	1.3	1.3	1.3	1.4	1.2	1.1	.9	1.1	1.0	1.0	1.1	1.0	.9	.9	1.0	.9	1.0	1.2	1.4	1.3	1.0	1.2	1.1	1.3	1.6	1.8
1.8	1.6	1.5	1.1	1.0	1.0	1.2	1.2	1.5	1.3	1.5	1.8	1.9	1.7	1.7	1.3	1.1	1.2	1.2	1.5	1.2	1.1	1.0	.8	.8	1.0	1.3	1.2	1.5	1.2	1.2	1.5	1.6	1.8	2.0	1.8
1.2	1.3	1.2	.9	.7	.6	.8	1.1	1.9	1.6	2.6	2.8	2.1	1.7	1.8	2.0	1.4	1.2	1.1	1.2	.5	.5	.6	.5	.5	1.0	.9	1.6	1.7	1.0	1.1	1.7	2.2	2.1	1.9	1.4
1.2	1.2	.9	.6	.5	1.2	1.5	2.7	2.3	3.0	2.7	2.2	1.6	2.3	1.6	1.0	.8	.9	.7	.5	.4	.6	.5	.5	.7	1.0	2.4	2.6	1.2	1.1	2.8	2.2	2.1	2.4	1.7	1.9
2.5	3.4	3.0	2.6	2.3	3.0	3.1	4.7	4.5	3.8	3.2	2.5	2.6	2.9	2.6	2.7	3.5	2.9	2.1	3.2	3.0	3.0	1.3	.7	2.1	3.0	4.4	3.9	3.1	2.8	3.9	2.6	3.6	4.3	4.3	3.1
3.5	4.1	3.9	2.9	2.2	1.4	1.4	2.1	2.4	3.4	4.1	3.8	2.3	2.1	2.5	2.6	2.8	2.4	2.6	3.8	4.1	3.0	.6	1.7	3.7	3.5	3.8	4.0	3.8	3.7	2.8	3.4	3.3	3.7	3.7	4.1
2.7	1.7	1.3	.9	.6	.6	.7	.6	.5	1.0	3.6	4.3	3.2	1.8	.8	.7	.4	.7	.7	2.3	3.3	1.7	.5	1.5	3.3	4.4	4.4	4.9	3.6	2.5	2.1	3.4	3.4	4.0	3.6	3.0
2.6	2.3	2.0	.9	.4	.4	.5	.5	.8	1.1	2.2	3.3	3.2	1.6	.7	.6	.5	.4	.7	1.0	1.2	.5	.4	.5	1.1	1.7	1.7	2.2	1.7	.9	.5	1.0	.9	1.6	2.2	2.6
1.6	1.7	1.3	2.1	1.9	1.4	1.0	1.0	.9	.9	1.0	2.0	3.3	2.0	1.5	1.3	.9	.7	.8	.9	1.3	.9	.5	.6	.6	.6	.6	.5	.6	.8	1.0	.9	.8	.8	.9	1.3
.7	.9	1.0	1.6	2.8	2.3	2.1	1.7	1.3	.8	1.2	2.0	2.3	2.1	2.1	2.0	1.7	1.1	1.1	.9	1.5	1.6	1.3	1.1	1.0	.9	.8	.8	.7	.8	1.2	1.8	1.5	1.1	1.0	.7
.7	.8	.8	.9	1.3	1.7	2.1	2.1	1.5	1.1	1.2	1.7	1.5	1.6	1.8	2.0	2.0	2.2	2.1	1.7	1.5	1.4	1.5	1.5	1.5	1.4	1.3	1.3	1.2	1.1	1.2	1.4	1.4	1.3	1.0	1.1
1.5	1.4	1.4	1.4	1.4	1.5	1.6	1.9	2.0	1.8	1.8	1.8	1.4	1.2	1.3	1.5	2.1	2.1	2.0	1.7	1.6	1.7	1.7	1.6	1.8	1.7	1.6	1.6	1.4	1.3	1.5	1.3	1.6	1.8	1.5	1.4
1.7	1.7	1.6	1.4	1.4	1.5	1.5	1.6	2.0	2.1	2.0	2.2	2.7	2.7	2.7	2.7	2.5	1.8	1.4	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.3	1.4	1.8	1.8	1.9	2.1	2.0	1.8
.9	.9	1.0	1.4	1.7	1.7	1.8	2.0	2.1	2.1	2.6	3.4	3.5	3.3	3.1	3.0	2.7	2.1	1.8	1.5	1.3	1.2	1.1	1.0	1.0	1.1	1.0	.9	1.0	1.2	1.2	1.2	1.1	1.2	1.2	.8
1.3	1.4	1.7	1.9	1.9	2.0	2.1	2.3	2.3	2.3	2.3	2.6	2.7	2.9	2.9	2.8	2.7	2.5	2.4	2.3	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.7	1.7	1.6	1.4

Figure 49. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2001

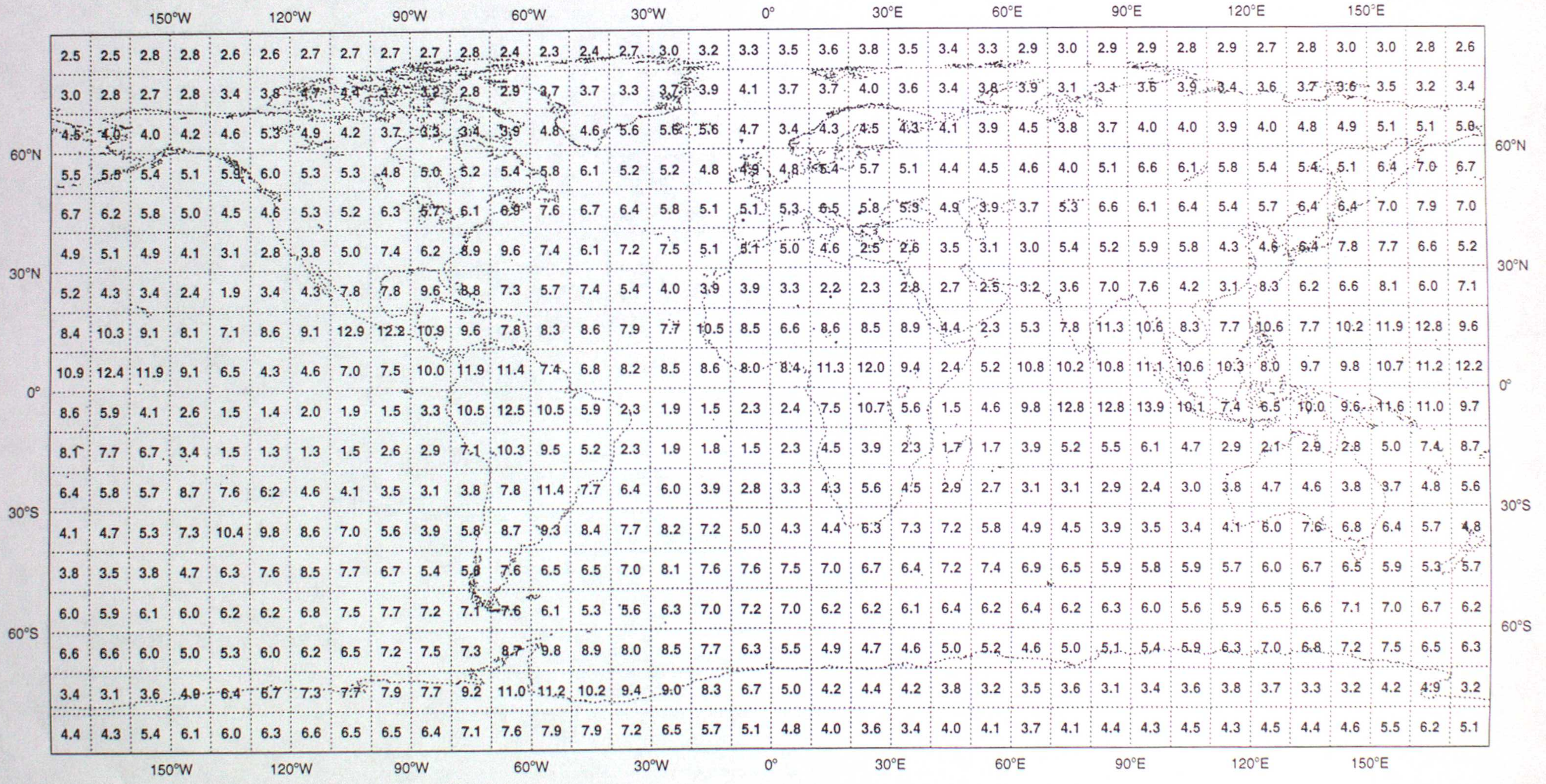
Channel: AMSUA-5 (700 hPa)

NOAA16, using all observations



5.2	5.1	6.0	6.0	5.6	5.4	5.4	5.6	7.1	9.8	11.3	8.0	7.0	7.2	8.4	8.6	7.2	7.3	7.7	8.0	8.3	7.9	7.8	7.6	7.0	6.7	6.4	6.2	6.2	6.4	6.2	6.2	6.3	6.2	5.9	5.8
7.1	6.5	6.2	6.8	7.6	8.2	9.6	8.6	8.3	9.1	9.8	9.5	11.0	8.6	6.8	9.1	9.4	9.7	9.3	9.7	9.6	9.3	9.2	9.6	9.4	7.9	7.7	8.3	8.4	7.3	7.7	8.1	8.1	7.7	7.0	7.3
10.8	10.1	10.5	11.5	11.4	12.8	12.3	10.5	9.5	8.7	9.0	10.0	11.8	10.8	13.6	13.1	12.4	11.0	9.6	11.7	12.3	11.4	10.8	10.1	10.7	9.8	9.2	9.5	9.5	9.5	9.7	11.0	11.0	11.1	11.7	11.8
12.7	12.7	13.4	13.0	14.4	14.4	13.2	13.5	12.5	12.0	12.5	12.6	13.3	14.0	12.4	12.2	11.4	12.3	12.5	13.7	14.1	13.1	11.9	11.9	12.0	11.7	12.7	15.4	14.1	13.4	13.1	12.8	12.6	14.0	15.4	15.2
14.5	13.1	13.1	12.4	11.7	11.8	14.0	13.4	14.8	14.4	15.3	16.0	16.8	15.1	14.8	13.2	12.0	13.4	13.7	16.6	15.7	13.9	14.0	11.9	11.2	14.1	17.0	16.5	17.2	15.0	14.9	15.3	15.2	15.9	16.5	15.6
11.8	12.0	11.5	10.6	8.0	6.3	10.8	13.8	16.6	14.7	20.1	20.9	16.2	13.9	15.7	16.6	11.5	14.6	15.4	12.4	6.0	6.5	8.3	8.2	6.8	12.9	12.9	13.2	13.4	12.8	12.6	14.9	17.3	17.1	14.6	12.2
11.6	9.8	7.4	4.9	4.7	7.2	9.7	15.9	16.6	19.7	18.4	15.9	13.0	14.5	12.4	10.2	11.6	14.3	14.1	7.0	6.8	8.1	8.9	6.7	7.0	8.1	14.1	14.6	9.0	7.3	15.4	12.7	13.3	16.4	13.3	15.8
16.1	19.3	17.3	14.9	13.5	16.2	17.7	24.0	23.0	21.3	18.9	15.8	15.8	16.5	15.8	15.7	21.1	18.2	16.8	19.0	19.4	18.4	11.6	5.2	10.3	16.3	22.0	21.2	16.4	14.8	20.8	16.0	20.4	23.4	24.2	18.7
21.0	22.7	21.7	17.7	13.4	10.3	10.3	14.3	15.2	19.6	21.8	21.2	14.5	14.3	17.3	17.5	17.7	15.9	17.4	22.0	22.7	18.8	7.9	11.4	22.7	21.4	22.2	22.0	21.0	20.2	16.8	19.6	19.3	20.8	21.3	22.5
15.8	10.6	7.2	4.7	3.1	2.9	4.1	3.8	3.2	7.1	20.4	22.6	18.3	11.0	5.1	4.0	3.1	4.6	4.8	16.0	20.4	13.2	3.4	9.8	19.1	24.8	24.7	25.9	19.3	14.9	14.0	19.7	18.9	22.5	20.8	18.3
17.7	15.1	13.1	7.5	4.3	3.9	3.7	3.8	4.8	4.8	13.9	20.6	19.3	12.7	6.3	4.7	3.5	3.1	3.7	12.2	10.1	6.0	4.2	4.4	8.5	10.3	10.9	12.5	11.7	9.2	7.9	6.7	5.9	10.7	15.6	18.1
15.1	14.4	14.4	19.2	17.5	14.1	10.4	8.8	8.6	6.8	8.2	16.1	21.9	17.6	15.8	13.8	9.4	5.5	5.9	11.2	15.6	11.0	7.7	6.9	8.5	8.4	7.5	6.6	7.9	14.5	17.3	15.4	12.5	10.7	12.1	14.6
10.7	11.7	12.9	15.9	21.2	20.2	17.7	14.5	12.4	9.2	13.3	18.5	18.3	17.5	16.1	17.2	15.0	11.0	9.3	10.7	15.1	16.2	15.4	13.3	12.0	10.6	8.8	8.3	8.4	11.0	15.4	18.3	17.2	15.3	14.0	12.5
9.1	8.9	9.3	10.6	13.6	15.6	16.7	15.5	13.8	11.8	12.9	16.2	14.2	13.7	14.2	15.1	14.6	14.5	14.5	14.1	14.0	13.0	14.3	14.9	14.2	13.4	12.3	12.0	12.5	12.9	13.4	14.2	14.6	13.6	12.6	12.3
11.5	11.3	11.5	11.6	12.3	12.8	13.8	14.6	14.7	13.9	14.3	14.5	12.0	10.7	10.6	11.2	11.8	12.2	11.8	10.9	11.0	11.2	12.0	11.7	11.9	11.6	11.9	11.4	11.2	12.0	13.1	13.6	13.9	13.6	13.1	12.6
11.6	11.6	10.5	8.7	9.5	10.4	11.1	11.7	12.8	13.4	13.2	14.5	15.8	14.3	12.7	12.3	11.9	10.7	9.9	8.6	8.5	8.8	9.7	10.2	8.8	9.0	9.8	10.3	11.3	12.2	13.5	13.4	13.1	12.9	11.3	11.3
6.0	5.8	8.1	10.4	11.3	12.3	12.8	12.9	13.3	13.5	15.7	16.2	15.5	15.1	14.7	15.4	13.5	10.6	8.1	6.6	7.3	6.1	5.4	4.4	5.4	5.5	4.2	4.9	5.5	5.6	5.6	4.6	4.6	6.3	9.5	5.6
9.8	9.1	10.3	10.1	9.0	9.1	9.2	9.1	9.4	9.1	10.4	11.8	12.6	13.0	11.3	9.4	7.7	6.8	6.1	5.1	4.5	4.4	5.4	5.9	5.4	5.9	6.3	6.0	6.2	6.0	6.1	5.9	6.3	8.3	12.7	10.9

Figure 50. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2001
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations

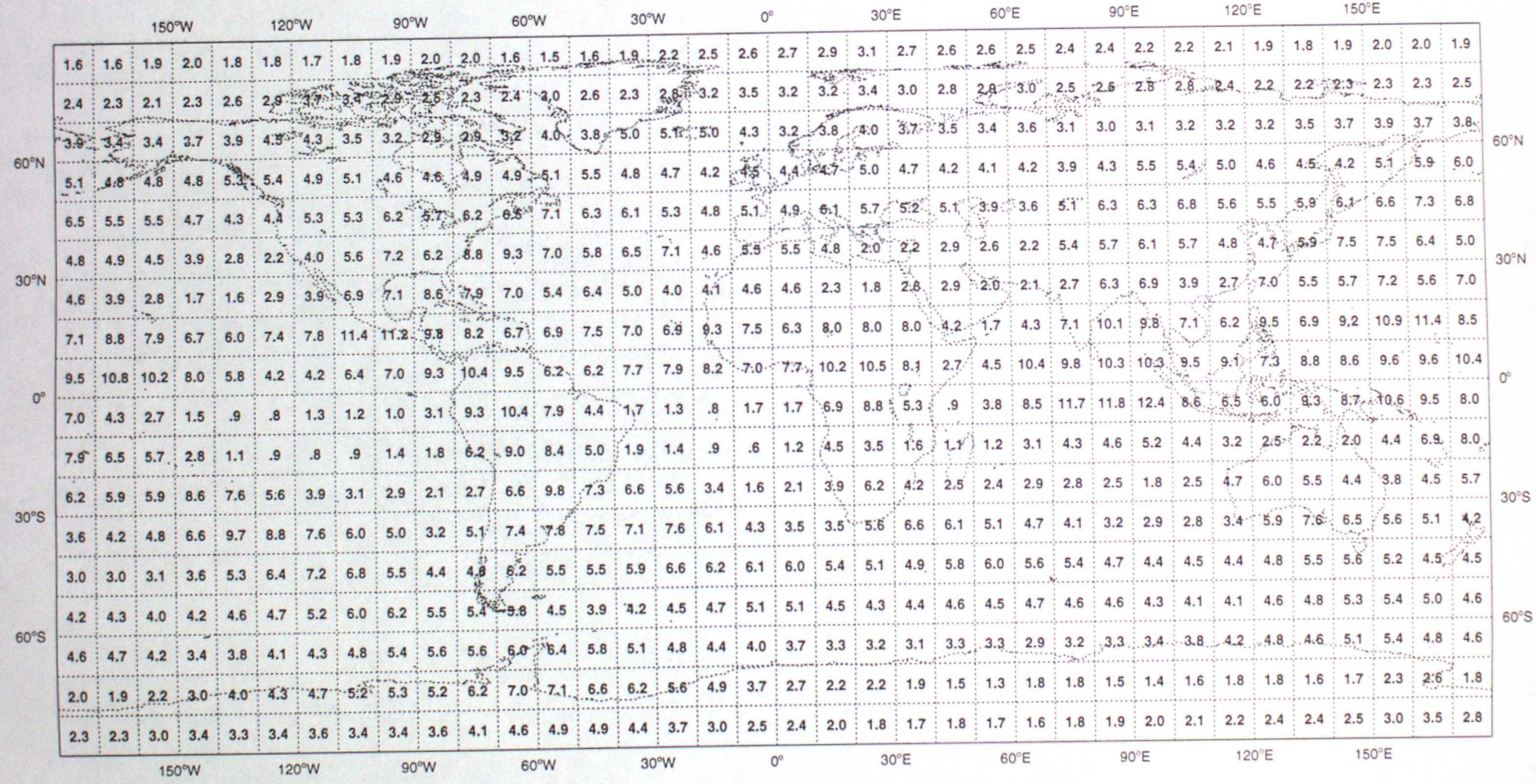


2.5	2.5	2.8	2.8	2.6	2.6	2.7	2.7	2.7	2.7	2.8	2.4	2.3	2.4	2.7	3.0	3.2	3.3	3.5	3.6	3.8	3.5	3.4	3.3	2.9	3.0	2.9	2.9	2.8	2.9	2.7	2.8	3.0	3.0	2.8	2.6
3.0	2.8	2.7	2.8	3.4	3.8	4.7	4.4	3.7	3.2	2.8	2.9	3.7	3.7	3.3	3.7	3.9	4.1	3.7	3.7	4.0	3.6	3.4	3.8	3.9	3.1	3.4	3.6	3.9	3.4	3.6	3.7	3.6	3.5	3.2	3.4
4.5	4.0	4.0	4.2	4.6	5.3	4.9	4.2	3.7	3.3	3.4	3.9	4.8	4.6	5.6	5.6	5.6	4.7	3.4	4.3	4.5	4.3	4.1	3.9	4.5	3.8	3.7	4.0	4.0	3.9	4.0	4.8	4.9	5.1	5.1	5.8
5.5	5.8	5.4	5.1	5.9	6.0	5.3	5.3	4.8	5.0	5.2	5.4	5.8	6.1	5.2	5.2	4.8	4.9	4.8	5.4	5.7	5.1	4.4	4.5	4.6	4.0	5.1	6.6	6.1	5.8	5.4	5.4	5.1	6.4	7.0	6.7
6.7	6.2	5.8	5.0	4.5	4.6	5.3	5.2	6.3	5.7	6.1	6.9	7.6	6.7	6.4	5.8	5.1	5.1	5.3	6.5	5.8	5.3	4.9	3.9	3.7	5.3	6.6	6.1	6.4	5.4	5.7	6.4	6.4	7.0	7.9	7.0
4.9	5.1	4.9	4.1	3.1	2.8	3.8	5.0	7.4	6.2	8.9	9.6	7.4	6.1	7.2	7.5	5.1	5.1	5.0	4.6	2.5	2.6	3.5	3.1	3.0	5.4	5.2	5.9	5.8	4.3	4.6	6.4	7.8	7.7	6.6	5.2
5.2	4.3	3.4	2.4	1.9	3.4	4.3	7.8	7.8	9.6	8.8	7.3	5.7	7.4	5.4	4.0	3.9	3.9	3.3	2.2	2.3	2.8	2.7	2.5	3.2	3.6	7.0	7.6	4.2	3.1	8.3	6.2	6.6	8.1	6.0	7.1
8.4	10.3	9.1	8.1	7.1	8.6	9.1	12.9	12.2	10.9	9.6	7.8	8.3	8.6	7.9	7.7	10.5	8.5	6.6	8.6	8.5	8.9	4.4	2.3	5.3	7.8	11.3	10.6	8.3	7.7	10.6	7.7	10.2	11.9	12.8	9.6
10.9	12.4	11.9	9.1	6.5	4.3	4.6	7.0	7.5	10.0	11.9	11.4	7.4	6.8	8.2	8.5	8.6	8.0	8.4	11.3	12.0	9.4	2.4	5.2	10.8	10.2	10.8	11.1	10.6	10.3	8.0	9.7	9.8	10.7	11.2	12.2
8.6	5.9	4.1	2.6	1.5	1.4	2.0	1.9	1.5	3.3	10.5	12.5	10.5	5.9	2.3	1.9	1.5	2.3	2.4	7.5	10.7	5.6	1.5	4.6	9.8	12.8	12.8	13.9	10.1	7.4	6.5	10.0	9.6	11.6	11.0	9.7
8.1	7.7	6.7	3.4	1.5	1.3	1.3	1.5	2.6	2.9	7.1	10.3	9.5	5.2	2.3	1.9	1.8	1.5	2.3	4.5	3.9	2.3	1.7	1.7	3.9	5.2	5.5	6.1	4.7	2.9	2.1	2.9	2.8	5.0	7.4	8.7
6.4	5.8	5.7	8.7	7.6	6.2	4.6	4.1	3.5	3.1	3.8	7.8	11.4	7.7	6.4	6.0	3.9	2.8	3.3	4.3	5.6	4.5	2.9	2.7	3.1	3.1	2.9	2.4	3.0	3.8	4.7	4.6	3.8	3.7	4.8	5.6
4.1	4.7	5.3	7.3	10.4	9.8	8.6	7.0	5.6	3.9	5.8	8.7	9.3	8.4	7.7	8.2	7.2	5.0	4.3	4.4	6.3	7.3	7.2	5.8	4.9	4.5	3.9	3.5	3.4	4.1	6.0	7.6	6.8	6.4	5.7	4.8
3.8	3.5	3.8	4.7	6.3	7.6	8.5	7.7	6.7	5.4	5.8	7.6	6.5	6.5	7.0	8.1	7.6	7.6	7.5	7.0	6.7	6.4	7.2	7.4	6.9	6.5	5.9	5.8	5.9	5.7	6.0	6.7	6.5	5.9	5.3	5.7
6.0	5.9	6.1	6.0	6.2	6.2	6.8	7.5	7.7	7.2	7.1	7.6	6.1	5.3	5.6	6.3	7.0	7.2	7.0	6.2	6.2	6.1	6.4	6.2	6.4	6.2	6.3	6.0	5.6	5.9	6.5	6.6	7.1	7.0	6.7	6.2
6.6	6.6	6.0	5.0	5.3	6.0	6.2	6.5	7.2	7.5	7.3	8.7	9.8	8.9	8.0	8.5	7.7	6.3	5.5	4.9	4.7	4.6	5.0	5.2	4.6	5.0	5.1	5.4	5.9	6.3	7.0	6.8	7.2	7.5	6.5	6.3
3.4	3.1	3.6	4.9	6.4	6.7	7.3	7.7	7.9	7.7	9.2	11.0	11.2	10.2	9.4	9.0	8.3	6.7	5.0	4.2	4.4	4.2	3.8	3.2	3.5	3.6	3.1	3.4	3.6	3.8	3.7	3.3	3.2	4.2	4.9	3.2
4.4	4.3	5.4	6.1	6.0	6.3	6.6	6.5	6.5	6.4	7.1	7.6	7.9	7.9	7.2	6.5	5.7	5.1	4.8	4.0	3.6	3.4	4.0	4.1	3.7	4.1	4.4	4.3	4.5	4.3	4.5	4.4	4.6	5.5	6.2	5.1

Figure 51. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2001

Channel: AMSUA-7 (300 hPa)

NOAA16, using all observations

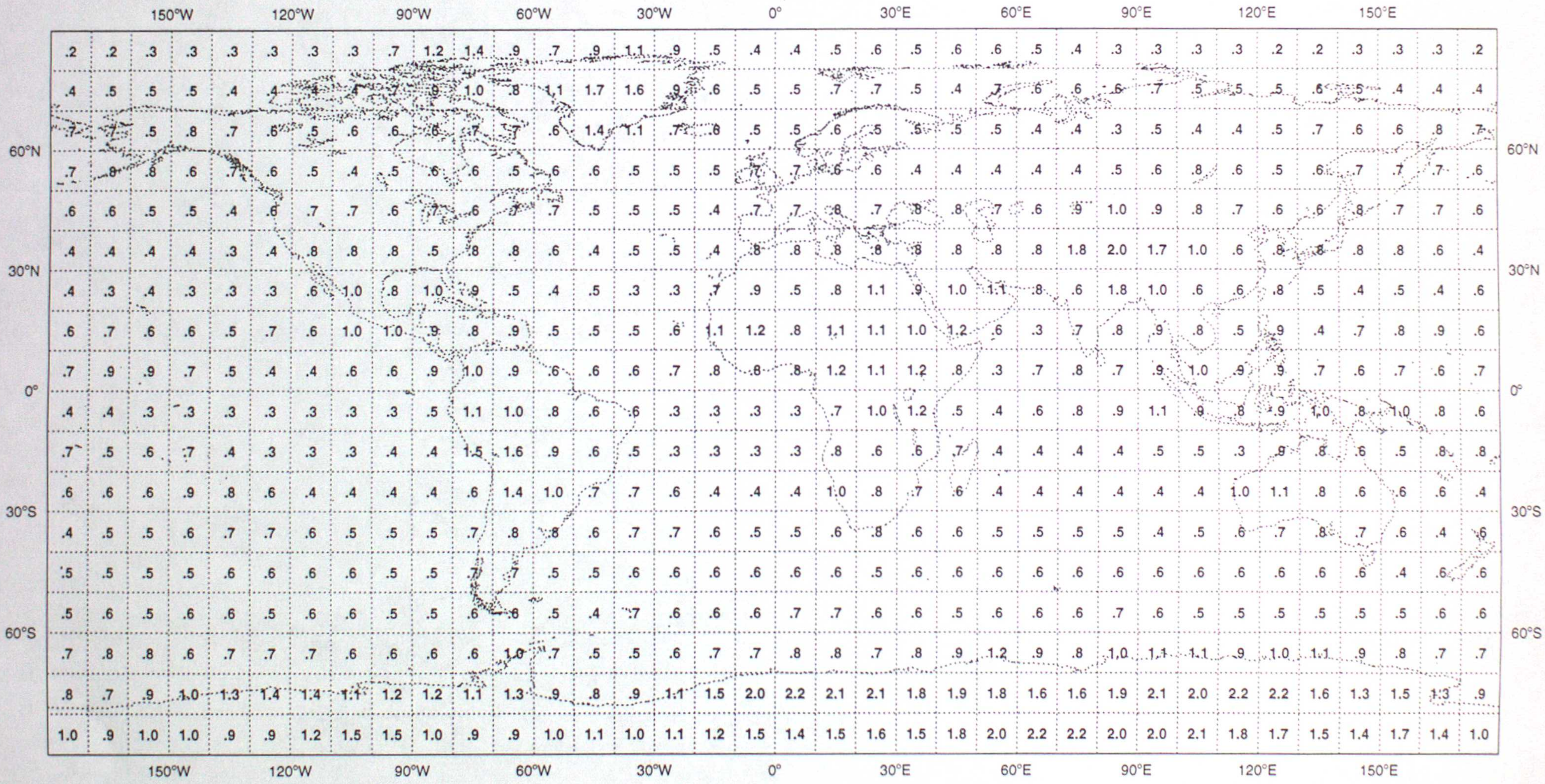


1.6	1.6	1.9	2.0	1.8	1.8	1.7	1.8	1.9	2.0	2.0	1.6	1.5	1.6	1.9	2.2	2.5	2.6	2.7	2.9	3.1	2.7	2.6	2.6	2.5	2.4	2.4	2.2	2.2	2.1	1.9	1.8	1.9	2.0	2.0	1.9
2.4	2.3	2.1	2.3	2.6	2.9	3.7	3.4	2.9	2.5	2.3	2.4	3.0	2.6	2.3	2.8	3.2	3.5	3.2	3.2	3.4	3.0	2.8	2.8	3.0	2.5	2.5	2.8	2.8	2.4	2.2	2.2	2.3	2.3	2.3	2.5
3.9	3.4	3.4	3.7	3.9	4.5	4.3	3.5	3.2	2.9	2.9	3.2	4.0	3.8	5.0	5.1	5.0	4.3	3.2	3.8	4.0	3.7	3.5	3.4	3.6	3.1	3.0	3.1	3.2	3.2	3.2	3.5	3.7	3.9	3.7	3.8
5.1	4.8	4.8	4.8	5.3	5.4	4.9	5.1	4.6	4.6	4.9	4.9	5.1	5.5	4.8	4.7	4.2	4.5	4.4	4.7	5.0	4.7	4.2	4.1	4.2	3.9	4.3	5.5	5.4	5.0	4.6	4.5	4.2	5.1	5.9	6.0
6.5	5.5	5.5	4.7	4.3	4.4	5.3	5.3	6.2	5.7	6.2	6.5	7.1	6.3	6.1	5.3	4.8	5.1	4.9	6.1	5.7	5.2	5.1	3.9	3.6	5.1	6.3	6.3	6.8	5.6	5.5	5.9	6.1	6.6	7.3	6.8
4.8	4.9	4.5	3.9	2.8	2.2	4.0	5.6	7.2	6.2	8.8	9.3	7.0	5.8	6.5	7.1	4.6	5.5	5.5	4.8	2.0	2.2	2.9	2.6	2.2	5.4	5.7	6.1	5.7	4.8	4.7	5.9	7.5	7.5	6.4	5.0
4.6	3.9	2.8	1.7	1.6	2.9	3.9	6.9	7.1	8.6	7.9	7.0	5.4	6.4	5.0	4.0	4.1	4.6	4.6	2.3	1.8	2.8	2.9	2.0	2.1	2.7	6.3	6.9	3.9	2.7	7.0	5.5	5.7	7.2	5.6	7.0
7.1	8.8	7.9	6.7	6.0	7.4	7.8	11.4	11.2	9.8	8.2	6.7	6.9	7.5	7.0	6.9	9.3	7.5	6.3	8.0	8.0	8.0	4.2	1.7	4.3	7.1	10.1	9.8	7.1	6.2	9.5	6.9	9.2	10.9	11.4	8.5
9.5	10.8	10.2	8.0	5.8	4.2	4.2	6.4	7.0	9.3	10.4	9.5	6.2	6.2	7.7	7.9	8.2	7.0	7.7	10.2	10.5	8.1	2.7	4.5	10.4	9.8	10.3	10.3	9.5	9.1	7.3	8.8	8.6	9.6	9.6	10.4
7.0	4.3	2.7	1.5	.9	.8	1.3	1.2	1.0	3.1	9.3	10.4	7.9	4.4	1.7	1.3	.8	1.7	1.7	6.9	8.8	5.3	.9	3.8	8.5	11.7	11.8	12.4	8.6	6.5	6.0	9.3	8.7	10.6	9.5	8.0
7.9	6.5	5.7	2.8	1.1	.9	.8	.9	1.4	1.8	6.2	9.0	8.4	5.0	1.9	1.4	.9	.6	1.2	4.5	3.5	1.6	1.1	1.2	3.1	4.3	4.6	5.2	4.4	3.2	2.5	2.2	2.0	4.4	6.9	8.0
6.2	5.9	5.9	8.6	7.6	5.6	3.9	3.1	2.9	2.1	2.7	6.6	9.8	7.3	6.6	5.6	3.4	1.6	2.1	3.9	6.2	4.2	2.5	2.4	2.9	2.8	2.5	1.8	2.5	4.7	6.0	5.5	4.4	3.8	4.5	5.7
3.6	4.2	4.8	6.6	9.7	8.8	7.6	6.0	5.0	3.2	5.1	7.4	7.8	7.5	7.1	7.6	6.1	4.3	3.5	3.5	5.6	6.6	6.1	5.1	4.7	4.1	3.2	2.9	2.8	3.4	5.9	7.6	6.5	5.6	5.1	4.2
3.0	3.0	3.1	3.6	5.3	6.4	7.2	6.8	5.5	4.4	4.8	6.2	5.5	5.5	5.9	6.6	6.2	6.1	6.0	5.4	5.1	4.9	5.8	6.0	5.6	5.4	4.7	4.4	4.5	4.4	4.8	5.5	5.6	5.2	4.5	4.5
4.2	4.3	4.0	4.2	4.6	4.7	5.2	6.0	6.2	5.5	5.4	5.8	4.5	3.9	4.2	4.5	4.7	5.1	5.1	4.5	4.3	4.4	4.6	4.5	4.7	4.6	4.6	4.3	4.1	4.1	4.6	4.8	5.3	5.4	5.0	4.6
4.6	4.7	4.2	3.4	3.8	4.1	4.3	4.8	5.4	5.6	5.6	6.0	6.4	5.8	5.1	4.8	4.4	4.0	3.7	3.3	3.2	3.1	3.3	3.3	2.9	3.2	3.3	3.4	3.8	4.2	4.8	4.6	5.1	5.4	4.8	4.6
2.0	1.9	2.2	3.0	4.0	4.3	4.7	5.2	5.3	5.2	6.2	7.0	7.1	6.6	6.2	5.6	4.9	3.7	2.7	2.2	2.2	1.9	1.5	1.3	1.8	1.8	1.5	1.4	1.6	1.8	1.8	1.6	1.7	2.3	2.6	1.8
2.3	2.3	3.0	3.4	3.3	3.4	3.6	3.4	3.4	3.6	4.1	4.6	4.9	4.9	4.4	3.7	3.0	2.5	2.4	2.0	1.8	1.7	1.8	1.7	1.6	1.8	1.9	2.0	2.1	2.2	2.4	2.4	2.5	3.0	3.5	2.8

Figure 52. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2001

Channel: AMSUA-7 (300 hPa)

NOAA16, using all observations



.2	.2	.3	.3	.3	.3	.3	.3	.7	1.2	1.4	.9	.7	.9	1.1	.9	.5	.4	.4	.5	.6	.5	.6	.6	.5	.4	.3	.3	.3	.3	.2	.2	.3	.3	.3	.2
.4	.5	.5	.5	.4	.4	.4	.4	.7	.9	1.0	.8	1.1	1.7	1.6	.9	.6	.5	.5	.7	.7	.5	.4	.7	.6	.6	.6	.7	.5	.5	.5	.6	.5	.4	.4	.4
.7	.7	.5	.8	.7	.6	.5	.6	.6	.6	.7	.7	.6	1.4	1.1	.7	.8	.5	.5	.6	.5	.5	.5	.5	.4	.4	.3	.5	.4	.4	.5	.7	.6	.6	.8	.7
.7	.8	.8	.6	.7	.6	.5	.4	.5	.6	.6	.5	.6	.6	.5	.5	.5	.7	.7	.6	.6	.4	.4	.4	.4	.4	.5	.6	.8	.6	.5	.6	.7	.7	.7	.6
.6	.6	.5	.5	.4	.6	.7	.7	.6	.7	.6	.7	.7	.5	.5	.5	.4	.7	.7	.8	.7	.8	.8	.7	.6	.9	1.0	.9	.8	.7	.6	.6	.8	.7	.7	.6
.4	.4	.4	.4	.3	.4	.8	.8	.8	.5	.8	.8	.6	.4	.5	.5	.4	.8	.8	.8	.8	.8	.8	.8	.8	1.8	2.0	1.7	1.0	.6	.8	.8	.8	.8	.6	.4
.4	.3	.4	.3	.3	.3	.6	1.0	.8	1.0	.9	.5	.4	.5	.3	.3	.7	.9	.5	.8	1.1	.9	1.0	1.1	.8	.6	1.8	1.0	.6	.6	.8	.5	.4	.5	.4	.6
.6	.7	.6	.6	.5	.7	.6	1.0	1.0	.9	.8	.9	.5	.5	.5	.6	1.1	1.2	.8	1.1	1.1	1.0	1.2	.6	.3	.7	.8	.9	.8	.5	.9	.4	.7	.8	.9	.6
.7	.9	.9	.7	.5	.4	.4	.6	.6	.9	1.0	.9	.6	.6	.6	.7	.8	.8	.8	1.2	1.1	1.2	.8	.3	.7	.8	.7	.9	1.0	.9	.9	.7	.6	.7	.6	.7
.4	.4	.3	.3	.3	.3	.3	.3	.3	.5	1.1	1.0	.8	.6	.6	.3	.3	.3	.3	.7	1.0	1.2	.5	.4	.6	.8	.9	1.1	.9	.8	.9	1.0	.8	1.0	.8	.6
.7	.5	.6	.7	.4	.3	.3	.3	.4	.4	1.5	1.6	.9	.6	.5	.3	.3	.3	.3	.8	.6	.6	.7	.4	.4	.4	.4	.5	.5	.3	.9	.8	.6	.5	.8	.8
.6	.6	.6	.9	.8	.6	.4	.4	.4	.4	.6	1.4	1.0	.7	.7	.6	.4	.4	.4	1.0	.8	.7	.6	.4	.4	.4	.4	.4	.4	1.0	1.1	.8	.6	.6	.6	.4
.4	.5	.5	.6	.7	.7	.6	.5	.5	.5	.7	.8	.8	.6	.7	.7	.6	.5	.5	.6	.8	.6	.6	.5	.5	.5	.5	.4	.5	.6	.7	.8	.7	.6	.4	.6
.5	.5	.5	.5	.6	.6	.6	.6	.5	.5	.7	.7	.5	.5	.6	.6	.6	.6	.6	.6	.5	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.4	.6	.6
.5	.6	.5	.6	.6	.5	.6	.6	.5	.5	.6	.8	.5	.4	.7	.6	.6	.6	.7	.7	.6	.6	.5	.6	.6	.6	.7	.6	.5	.5	.5	.5	.5	.5	.6	.6
.7	.8	.8	.6	.7	.7	.7	.6	.6	.6	.6	1.0	.7	.5	.5	.6	.7	.7	.8	.8	.7	.8	.9	1.2	.9	.8	1.0	1.1	1.1	.9	1.0	1.1	.9	.8	.7	.7
.8	.7	.9	1.0	1.3	1.4	1.4	1.1	1.2	1.2	1.1	1.3	.9	.8	.9	1.1	1.5	2.0	2.2	2.1	2.1	1.8	1.9	1.8	1.6	1.6	1.9	2.1	2.0	2.2	2.2	1.6	1.3	1.5	1.3	.9
1.0	.9	1.0	1.0	.9	.9	1.2	1.5	1.5	1.0	.9	.9	1.0	1.1	1.0	1.1	1.2	1.5	1.4	1.5	1.6	1.5	1.8	2.0	2.2	2.2	2.0	2.0	2.1	1.8	1.7	1.5	1.4	1.7	1.4	1.0

Figure 53. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2001
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations

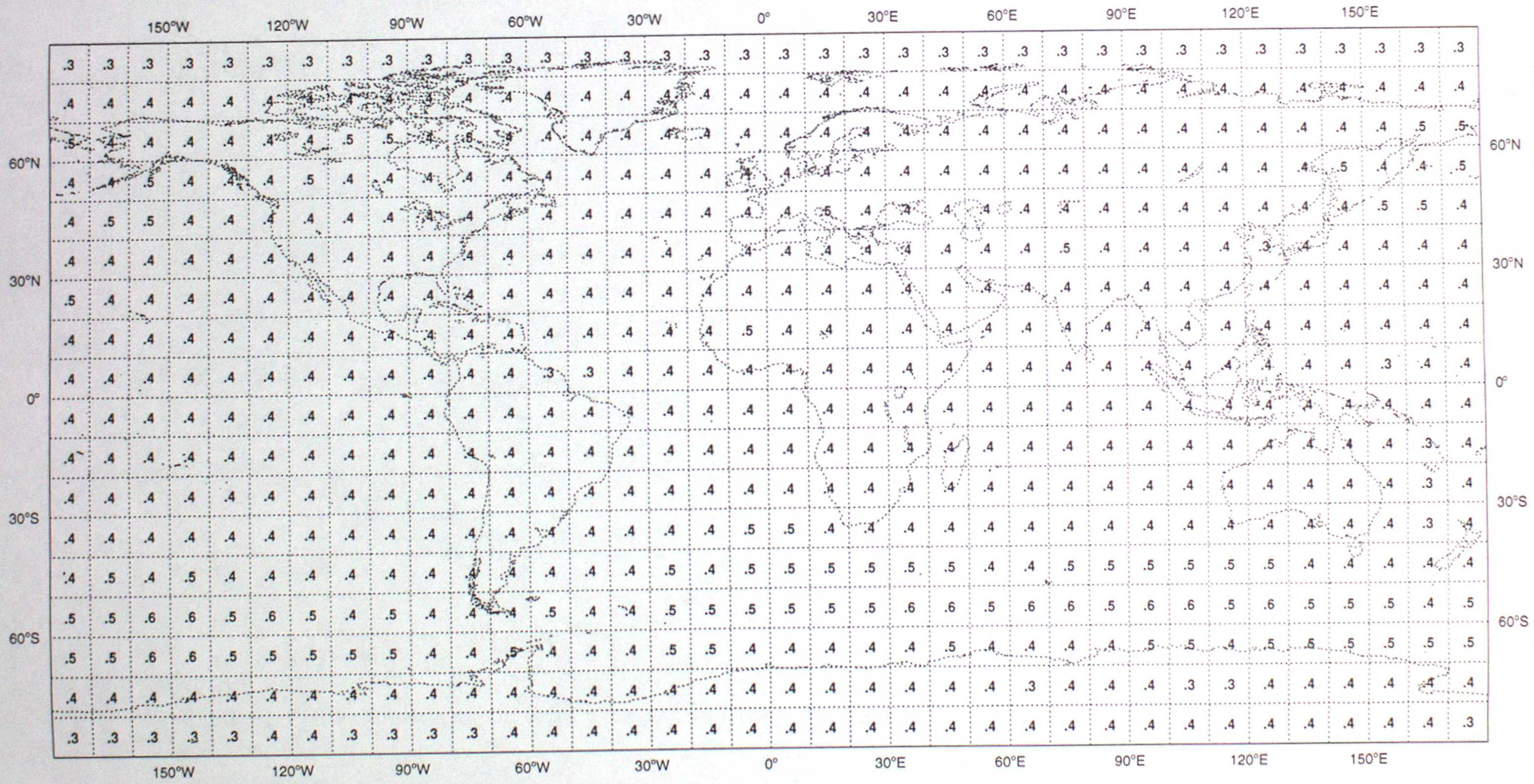
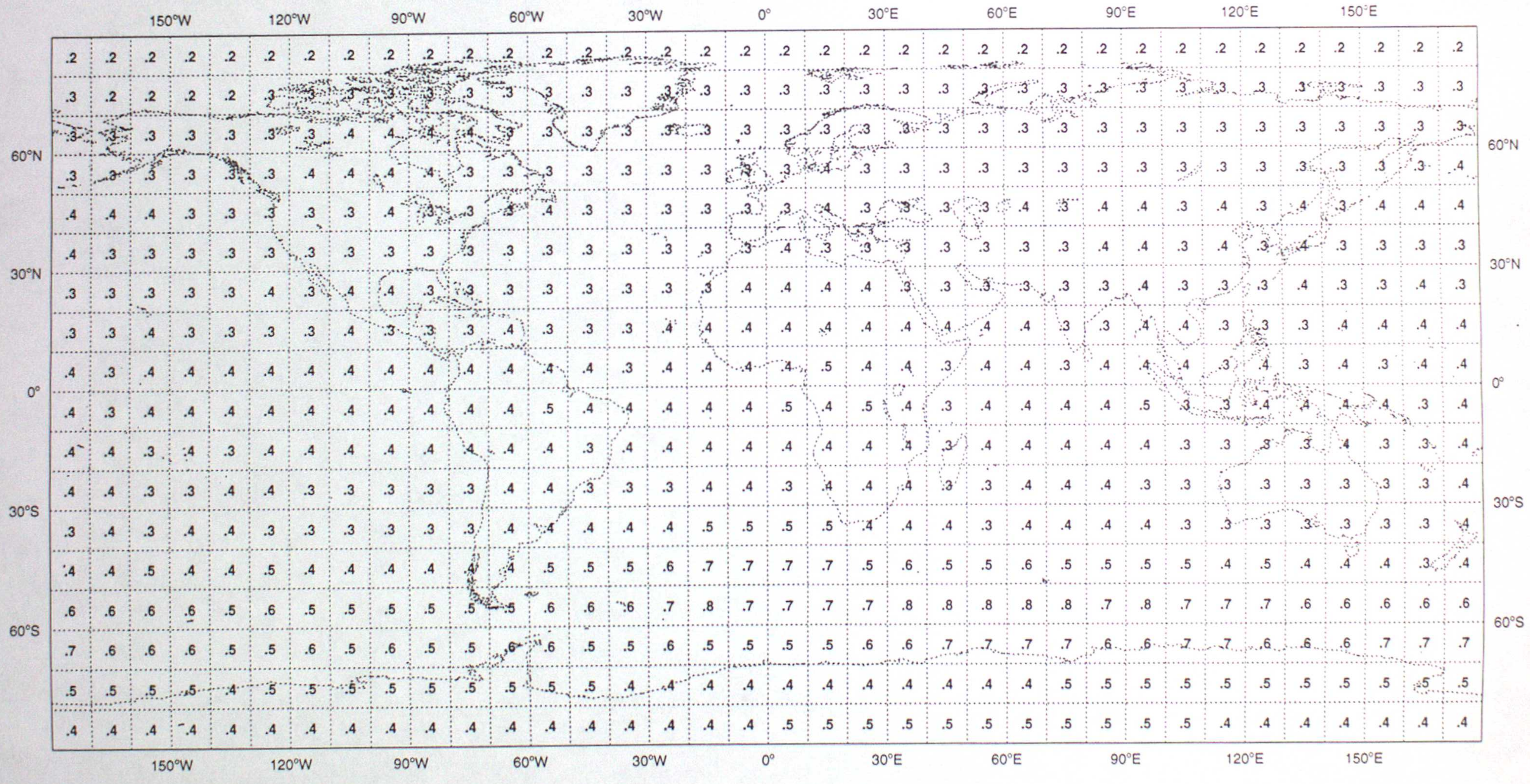

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 54. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2001
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations


150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
.2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2
.3 .2 .2 .2 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4
.4 .4 .4 .3 .3 .3 .3 .3 .4 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .4 .3 .4 .4 .3 .4 .3 .4 .3 .4 .4 .4
.4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .4 .3 .4 .3 .3 .3 .3
.3 .3 .3 .3 .3 .4 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .4 .3 .3 .4 .3
.3 .3 .4 .3 .3 .3 .3 .4 .3 .3 .3 .4 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .3 .3 .3 .4 .4 .4 .4
.4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .5 .4 .4 .3 .4 .4 .3 .4 .4 .4 .3 .4 .3 .4 .3 .4 .4
.4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .5 .4 .5 .4 .3 .4 .4 .4 .4 .5 .3 .3 .4 .4 .4 .4 .3 .4
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.3 .4 .3 .4 .4 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .5 .5 .5 .5 .4 .4 .4 .3 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .4
.4 .4 .5 .4 .4 .5 .4 .4 .4 .4 .4 .4 .5 .5 .5 .6 .7 .7 .7 .7 .5 .6 .5 .5 .6 .5 .5 .5 .5 .4 .5 .4 .4 .4 .3 .4
.6 .6 .6 .6 .5 .6 .5 .5 .5 .5 .5 .5 .6 .6 .6 .7 .8 .7 .7 .7 .7 .8 .8 .8 .8 .8 .7 .8 .7 .7 .7 .6 .6 .6 .6 .6
.7 .6 .6 .6 .5 .5 .6 .5 .6 .5 .5 .6 .6 .5 .5 .6 .5 .5 .5 .5 .6 .6 .7 .7 .7 .7 .6 .6 .7 .7 .6 .6 .6 .7 .7 .7
.5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: September 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoy.

Area monitored :10°N - 80°N, 85°W - 0°W

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :All hours combined.

Elements monitored
:Mean sea-level pressure (hPa)
:Wind speed ($m\ s^{-1}$)
:Wind direction (degrees)

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. A positive bias indicates the wind observation is veered to the background

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors

GROSS ERROR LIMITS
:15 hPa (pressure)
:25 $m\ s^{-1}$ (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
12505	30.9	-16.7	ALL	P	SUR	1	0	0	0.0	-0.2	0.2
21633	38.3	-77.0	ALL	P	SUR	109	109	100			
41502	24.6	-77.7	ALL	P	SUR	68	0	0	0.8	1.5	1.7
41505	27.0	-67.7	ALL	P	SUR	176	0	0	1.8	-1.9	2.6
41523	31.4	-52.9	ALL	P	SUR	358	0	0	0.5	-0.2	0.6
41552	19.3	-40.6	ALL	P	SUR	605	0	0	0.5	-0.9	1.1
41553	16.1	-58.7	ALL	P	SUR	594	0	0	0.5	-0.3	0.5
41554	19.6	-63.9	ALL	P	SUR	605	0	0	0.5	-0.2	0.5
41556	15.0	-53.7	ALL	P	SUR	318	0	0	0.5	-0.1	0.5
41557	20.3	-56.0	ALL	P	SUR	335	0	0	0.5	-0.1	0.5
41559	17.4	-49.9	ALL	P	SUR	585	0	0	0.6	-0.2	0.6
41560	14.8	-46.8	ALL	P	SUR	557	0	0	0.7	-0.3	0.8
41561	16.9	-47.4	ALL	P	SUR	566	0	0	0.6	-0.5	0.8
41563	12.1	-35.3	ALL	P	SUR	592	0	0	0.7	-0.5	0.8
41639	25.6	-60.1	ALL	P	SUR	232	0	0	0.6	1.2	1.3
41642	22.6	-69.9	ALL	P	SUR	272	0	0	0.5	0.2	0.5
41644	31.9	-39.8	ALL	P	SUR	344	1	0	1.1	-0.1	1.1
41645	25.8	-75.0	ALL	P	SUR	609	0	0	0.5	0.7	0.9
41646	25.9	-75.1	ALL	P	SUR	609	0	0	0.5	0.5	0.7
41647	28.5	-68.7	ALL	P	SUR	609	0	0	0.8	0.4	0.9
41648	24.7	-72.3	ALL	P	SUR	624	0	0	0.5	0.5	0.7
41650	23.8	-68.3	ALL	P	SUR	605	0	0	0.5	0.8	0.9
41651	24.5	-69.9	ALL	P	SUR	610	0	0	0.5	0.4	0.6
41652	25.7	-66.9	ALL	P	SUR	596	0	0	0.5	0.2	0.5
41654	38.3	-77.0	ALL	P	SUR	4	4	100			
44546	61.8	-21.3	ALL	P	SUR	1120	0	0	0.7	-0.6	0.9
44548	52.0	-21.8	ALL	P	SUR	635	0	0	1.3	0.1	1.3
44549	52.6	-42.7	ALL	P	SUR	1489	0	0	1.1	-0.3	1.1
44550	51.5	-41.2	ALL	P	SUR	1041	0	0	1.4	-0.7	1.6
44612	33.7	-23.5	ALL	P	SUR	747	0	0	0.6	-0.2	0.6
44613	34.0	-21.0	ALL	P	SUR	686	0	0	0.6	0.3	0.6
44616	46.4	-39.8	ALL	P	SUR	948	4	0	1.0	0.0	1.0
44620	27.6	-47.9	ALL	P	SUR	289	0	0	0.5	-0.4	0.6
44621	55.3	-40.0	ALL	P	SUR	1064	1	0	0.8	0.1	0.8
44623	34.4	-27.0	ALL	P	SUR	734	0	0	0.7	0.1	0.7
44624	43.8	-44.4	ALL	P	SUR	669	0	0	0.9	-0.3	0.9
44625	45.3	-56.1	ALL	P	SUR	983	0	0	1.2	-0.4	1.2
44627	50.7	-41.7	ALL	P	SUR	860	3	0	0.9	-1.0	1.4
44676	46.5	-39.6	ALL	P	SUR	2	0	0	0.0	-0.6	0.7
44721	38.1	-32.9	ALL	P	SUR	865	0	0	1.0	-0.1	1.0
44722	37.4	-32.7	ALL	P	SUR	877	3	0	0.9	-0.5	1.0
44723	49.8	-48.3	ALL	P	SUR	657	0	0	1.3	-0.5	1.4
44726	57.3	-36.4	ALL	P	SUR	712	0	0	1.0	-0.1	1.1
44729	41.8	-14.5	ALL	P	SUR	907	0	0	0.6	0.5	0.8
44735	34.2	-28.1	ALL	P	SUR	1	0	0	0.0	0.5	0.5
44761	55.0	-14.0	ALL	P	SUR	803	0	0	0.8	-0.3	0.8
44765	33.6	-32.1	ALL	P	SUR	507	10	2	1.8	-0.4	1.8
44771	57.0	-23.6	ALL	P	SUR	1162	0	0	1.0	0.1	1.0
44775	35.7	-39.5	ALL	P	SUR	1259	1	0	0.6	-0.5	0.8
44776	52.0	-24.2	ALL	P	SUR	1017	0	0	1.3	-0.3	1.3
44778	44.0	-23.7	ALL	P	SUR	878	0	0	0.8	-0.3	0.8
44805	43.2	-69.2	ALL	P	SUR	1	0	0	0.0	-1.1	1.1
44807	39.5	-70.1	ALL	P	SUR	1	0	0	0.0	-3.5	3.5
45805	41.7	-82.4	ALL	P	SUR	1	0	0	0.0	0.1	0.1
47556	44.7	-63.6	ALL	P	SUR	10	0	0	0.7	-5.7	5.7
569253	26.8	-79.2	ALL	P	SUR	1	0	0	0.0	1.9	1.9
61505	31.8	-14.6	ALL	P	SUR	1	0	0	0.0	-0.9	0.9
61514	58.5	-70.5	ALL	P	SUR	1	1	100			
62501	34.0	-18.0	ALL	P	SUR	748	0	0	0.7	0.4	0.8
62503	33.5	-15.9	ALL	P	SUR	860	0	0	0.6	-0.4	0.7

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
62504	38.9	-21.5	ALL	P	SUR	796	0	0	0.7	-0.1	0.8
62505	31.5	-15.8	ALL	P	SUR	768	0	0	0.7	0.0	0.7
62510	44.2	-17.5	ALL	P	SUR	169	0	0	0.7	-0.6	0.9
62511	41.0	-24.1	ALL	P	SUR	289	0	0	0.8	-0.2	0.9
62512	41.6	-18.1	ALL	P	SUR	520	0	0	0.8	-0.9	1.2
62514	57.6	-12.5	ALL	P	SUR	944	1	0	0.7	-0.5	0.9
62516	45.9	-15.0	ALL	P	SUR	568	0	0	0.7	-0.5	0.9
62518	44.1	-16.9	ALL	P	SUR	514	0	0	0.8	-0.3	0.8
62519	45.5	-14.4	ALL	P	SUR	569	0	0	0.8	0.0	0.8
62579	45.4	-13.8	ALL	P	SUR	1	0	0	0.0	-0.7	0.7
62596	61.7	-37.3	ALL	P	SUR	1040	0	0	1.1	0.0	1.1
62701	50.6	-2.7	ALL	P	SUR	1	0	0	0.0	-0.4	0.4
62726	53.8	-3.6	ALL	P	SUR	2	0	0	0.4	-0.2	0.4
62763	75.5	-8.5	ALL	P	SUR	1	0	0	0.0	-12.4	12.4
627940	26.4	-78.1	ALL	P	SUR	1	0	0	0.0	3.5	3.5
62801	45.2	-5.0	ALL	P	SUR	1	0	0	0.0	0.3	0.3
62823	51.4	-5.5	ALL	P	SUR	1	0	0	0.0	3.9	3.9
62852	48.5	-5.6	ALL	P	SUR	1	0	0	0.0	-0.6	0.6
62890	53.1	-11.2	ALL	P	SUR	1	0	0	0.0	-0.1	0.1
62916	45.9	-14.7	ALL	P	SUR	1	0	0	0.0	-1.2	1.2
64549	62.6	-33.9	ALL	P	SUR	1159	5	0	1.0	-0.2	1.0
64550	63.4	-27.5	ALL	P	SUR	1108	3	0	0.8	-0.1	0.8
64623	35.3	-26.8	ALL	P	SUR	1	0	0	0.0	0.0	0.0
64845	59.1	-11.4	ALL	P	SUR	1	0	0	0.0	0.0	0.0
65516	61.4	-34.4	ALL	P	SUR	1625	4	0	0.9	-0.3	0.9
65562	62.3	-29.4	ALL	P	SUR	2	0	0	0.7	1.2	1.4
65581	59.2	-29.1	ALL	P	SUR	1080	9	1	1.2	-0.5	1.3
65595	58.2	-33.0	ALL	P	SUR	1209	3	0	1.1	-0.1	1.1
65602	60.3	-21.9	ALL	P	SUR	1451	12	1	1.3	-0.5	1.4
65662	62.4	-32.2	ALL	P	SUR	1354	3	0	1.3	-0.2	1.3
65663	53.8	-36.1	ALL	P	SUR	300	3	1	6.0	2.9	6.6
WIND SPEED											
41552	19.3	-40.6	ALL	SPEED	SUR	604	1	0	1.6	-0.6	1.7
41553	16.1	-58.7	ALL	SPEED	SUR	588	0	0	1.6	0.2	1.6
41554	19.6	-63.9	ALL	SPEED	SUR	602	0	0	2.1	0.3	2.1
41556	15.0	-53.7	ALL	SPEED	SUR	316	0	0	1.2	0.5	1.3
41557	20.3	-56.0	ALL	SPEED	SUR	331	1	0	1.4	-0.4	1.4
41559	17.4	-49.9	ALL	SPEED	SUR	577	1	0	1.8	0.3	1.9
41560	14.8	-46.8	ALL	SPEED	SUR	554	2	0	1.7	0.7	1.8
41561	16.9	-47.4	ALL	SPEED	SUR	559	0	0	1.9	0.2	1.9
41563	12.1	-35.3	ALL	SPEED	SUR	585	0	0	2.6	0.8	2.7
41639	25.6	-60.1	ALL	SPEED	SUR	36	0	0	2.8	-2.8	4.0
41642	22.6	-69.9	ALL	SPEED	SUR	90	0	0	2.8	-4.7	5.5
41644	31.9	-39.8	ALL	SPEED	SUR	1	0	0	0.0	-2.3	2.3
41645	25.8	-75.0	ALL	SPEED	SUR	600	1	0	2.8	0.3	2.8
41646	25.9	-75.1	ALL	SPEED	SUR	599	3	1	2.9	0.4	3.0
41647	28.5	-68.7	ALL	SPEED	SUR	605	2	0	2.2	0.5	2.2
41648	24.7	-72.3	ALL	SPEED	SUR	623	1	0	1.8	-0.1	1.8
41650	23.8	-68.3	ALL	SPEED	SUR	605	2	0	1.3	-0.7	1.5
41651	24.5	-69.9	ALL	SPEED	SUR	604	0	0	1.7	-0.4	1.7
41652	25.7	-66.9	ALL	SPEED	SUR	595	1	0	1.6	-0.3	1.7
44805	43.2	-69.2	ALL	SPEED	SUR	1	0	0	0.0	1.0	1.0
44807	39.5	-70.1	ALL	SPEED	SUR	1	0	0	0.0	5.1	5.1
569253	26.8	-79.2	ALL	SPEED	SUR	1	0	0	0.0	0.5	0.5
62552	46.7	-6.1	ALL	SPEED	SUR	337	0	0	1.3	-0.3	1.3
62556	36.1	-18.6	ALL	SPEED	SUR	473	0	0	1.4	-0.3	1.4
62559	45.2	-19.3	ALL	SPEED	SUR	318	0	0	1.5	0.3	1.5

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND SPEED											
62567	37.2	-18.7	ALL	SPEED	SUR	494	0	0	1.4	-0.1	1.4
62569	34.8	-13.3	ALL	SPEED	SUR	190	0	0	1.3	0.1	1.3
62570	45.2	-14.0	ALL	SPEED	SUR	140	0	0	1.2	0.3	1.3
62572	39.7	-17.3	ALL	SPEED	SUR	448	0	0	1.5	0.5	1.6
62605	54.9	-16.5	ALL	SPEED	SUR	1	0	0	0.0	-3.9	3.9
62763	75.5	-8.5	ALL	SPEED	SUR	1	0	0	0.0	12.7	12.7
627940	26.4	-78.1	ALL	SPEED	SUR	1	0	0	0.0	1.9	1.9
62801	45.2	-5.0	ALL	SPEED	SUR	2	1	50	0.0	-0.5	0.5
62823	51.4	-5.5	ALL	SPEED	SUR	1	0	0	0.0	-5.2	5.2
62852	48.5	-5.6	ALL	SPEED	SUR	1	0	0	0.0	1.0	1.0
62890	53.1	-11.2	ALL	SPEED	SUR	2	0	0	0.9	1.2	1.5
64845	59.1	-11.4	ALL	SPEED	SUR	1	0	0	0.0	-1.1	1.1
WIND DIRECTION											
41552	19.3	-40.6	ALL	DIRN.	SUR	375	1	0	15.4	2.2	15.5
41553	16.1	-58.7	ALL	DIRN.	SUR	383	0	0	14.0	15.6	20.9
41554	19.6	-63.9	ALL	DIRN.	SUR	335	0	0	16.4	-14.8	22.1
41556	15.0	-53.7	ALL	DIRN.	SUR	191	0	0	24.1	2.0	24.2
41557	20.3	-56.0	ALL	DIRN.	SUR	143	1	1	28.2	-7.0	29.0
41559	17.4	-49.9	ALL	DIRN.	SUR	397	1	0	15.1	-0.6	15.1
41560	14.8	-46.8	ALL	DIRN.	SUR	394	2	1	16.4	10.3	19.4
41561	16.9	-47.4	ALL	DIRN.	SUR	367	0	0	15.9	-4.7	16.6
41563	12.1	-35.3	ALL	DIRN.	SUR	200	0	0	27.9	14.1	31.3
41639	25.6	-60.1	ALL	DIRN.	SUR	4	0	0	13.6	-87.6	88.7
41642	22.6	-69.9	ALL	DIRN.	SUR	8	0	0	36.9	32.2	49.0
41645	25.8	-75.0	ALL	DIRN.	SUR	138	1	1	23.5	20.5	31.2
41646	25.9	-75.1	ALL	DIRN.	SUR	157	3	2	31.3	5.8	31.8
41647	28.5	-68.7	ALL	DIRN.	SUR	182	2	1	20.5	-1.0	20.5
41648	24.7	-72.3	ALL	DIRN.	SUR	202	1	0	22.3	32.5	39.4
41650	23.8	-68.3	ALL	DIRN.	SUR	175	2	1	17.6	7.0	19.0
41651	24.5	-69.9	ALL	DIRN.	SUR	178	0	0	17.2	15.2	22.9
41652	25.7	-66.9	ALL	DIRN.	SUR	164	1	1	14.6	-12.5	19.2
44805	43.2	-69.2	ALL	DIRN.	SUR	1	0	0	0.0	-11.8	11.8
569253	26.8	-79.2	ALL	DIRN.	SUR	1	0	0	0.0	23.5	23.5
62552	46.7	-6.1	ALL	DIRN.	SUR	180	0	0	13.0	-7.0	14.8
62556	36.1	-18.6	ALL	DIRN.	SUR	207	0	0	12.6	17.2	21.3
62559	45.2	-19.3	ALL	DIRN.	SUR	174	0	0	14.4	-4.8	15.2
62567	37.2	-18.7	ALL	DIRN.	SUR	254	0	0	13.7	5.9	14.9
62569	34.8	-13.3	ALL	DIRN.	SUR	96	0	0	15.7	-0.6	15.7
62570	45.2	-14.0	ALL	DIRN.	SUR	103	0	0	9.1	4.3	10.1
62572	39.7	-17.3	ALL	DIRN.	SUR	287	0	0	14.4	2.7	14.7
62605	54.9	-16.5	ALL	DIRN.	SUR	1	0	0	0.0	-7.4	7.4
62801	45.2	-5.0	ALL	DIRN.	SUR	1	1	100			
62823	51.4	-5.5	ALL	DIRN.	SUR	1	0	0	0.0	-25.6	25.6
62852	48.5	-5.6	ALL	DIRN.	SUR	1	0	0	0.0	8.9	8.9
62890	53.1	-11.2	ALL	DIRN.	SUR	2	0	0	7.7	-1.3	7.8

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: September 2001

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:40°N - 70°N, 60°W - 0°W.
Standard of comparison		:Background field from UKMO global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	1602	1	5	1.6	0.2	1586	0	6	0	8.3	0.7
ACA	1714	0	3	1.5	-0.1	1746	0	3	0	6.7	0.6
AEA	321	0	6	1.8	0.6	319	0	6	0	6.6	0.3
AEL	444	2	11	1.6	-0.2	445	0	12	0	8.6	0.6
AFL	459	1	3	1.9	0.6	457	0	4	0	8.7	1.1
AFR	764	1	7	1.6	0.2	773	0	8	0	7.0	1.0
AIH	220	1	5	1.5	0.0	224	0	5	0	6.5	1.2
AJM	158	0	5	2.1	0.7	159	0	6	0	8.7	0.4
ALM	58	3	10	1.9	0.5	57	0	9	0	8.7	0.4
AMM	90	0	2	1.7	0.6	92	0	7	0	9.7	1.2
AMT	26	0	12	2.6	1.0	26	4	12	0	8.9	3.6
AMX	215	3	5	1.7	0.4	212	0	8	0	10.5	0.8
AVA	72	0	0	1.4	0.4	73	0	0	0	6.0	1.3
AZA	570	1	5	2.1	0.3	582	0	4	0	6.6	1.0
BAL	140	0	14	1.5	-0.2	146	0	12	0	6.8	0.4
BAW	562	0	6	1.7	0.1	566	1	7	0	6.6	0.4
BBB	39	0	3	1.4	0.7	37	0	5	0	9.2	-0.5
BLX	28	0	0	1.5	-0.2	27	0	4	0	7.9	0.8
BWA	62	2	100	2.3	1.4	62	0	8	0	9.2	1.1
CFC	35	0	11	2.0	0.5	35	0	11	0	6.8	1.2
CFG	499	0	1	1.4	-0.5	503	0	2	0	6.6	0.5
CKS	46	2	9	1.8	0.9	56	2	5	0	7.3	1.4
CLX	316	1	2	1.5	-0.1	314	0	3	0	6.4	0.1
CMM	586	0	5	1.5	-0.1	587	0	5	0	6.2	0.7
COA	224	0	8	1.6	-0.1	223	0	10	0	9.2	0.5
CRL	207	0	2	1.8	0.7	205	0	4	0	8.6	0.7
CTB	59	8	22	3.3	1.7	58	0	9	0	6.8	0.6
CUB	90	1	11	2.5	0.6	93	0	6	0	9.2	0.9
DAL	1155	0	18	1.5	-0.2	1161	0	18	0	7.6	0.3
DLH	1079	0	6	1.4	0.2	1074	0	7	0	7.4	1.1
EEZ	25	4	16	1.2	0.8	25	0	12	0	9.2	1.8
EIA	50	0	10	2.5	-0.4	50	0	34	0	17.1	3.8
ELY	122	1	2	1.8	0.3	120	0	3	0	7.6	0.9
ETH	32	3	16	0.8	-0.5	32	0	16	0	8.6	2.5
EWW	118	0	1	1.3	0.1	120	0	1	0	6.6	1.0
FDX	712	0	33	1.4	0.4	723	1	35	0	8.5	1.3
FIN	221	0	2	1.6	0.4	211	0	2	0	6.1	0.7
GAF	87	0	6	2.0	-0.4	87	0	8	0	9.0	0.4
GCO	61	0	2	1.7	0.6	64	0	100	0	14.7	3.6
GRL	33	0	0	1.1	-0.1	33	0	3	0	9.4	-0.1
GTI	136	0	7	1.8	-0.4	140	0	8	0	6.5	-0.2
IBE	1145	0	7	1.9	0.8	1130	0	8	0	8.0	0.7
ICE	938	0	2	1.5	0.1	932	1	3	0	7.6	0.7
IFL	21	0	0	2.3	-1.0	21	5	10	0	7.8	1.2
IWD	32	0	0	1.1	0.2	32	0	0	0	6.0	0.3
JKK	313	0	7	1.5	0.0	293	0	10	0	8.4	1.2
JMC	61	2	8	1.0	-0.3	61	0	7	0	6.0	-0.8
KLM	1163	0	6	1.6	0.0	1169	0	7	0	7.7	0.3
LDA	39	3	5	2.0	0.6	43	0	2	0	6.2	0.8
LDI	301	4	15	2.6	0.1	301	0	8	0	8.2	0.8
LIB	311	0	6	1.5	0.7	311	0	6	0	6.2	1.7
LOT	166	0	2	1.8	-1.0	164	0	4	0	8.4	0.7
LTU	636	1	6	1.3	-0.1	640	0	7	0	6.6	0.4
MON	75	0	5	1.2	0.2	75	0	7	0	6.5	0.9
MPD	170	2	3	1.5	0.2	171	0	2	0	7.3	0.9
MPH	368	0	2	1.7	-0.5	374	0	3	0	8.1	0.1
NCA	25	0	0	1.8	0.2	25	4	16	0	15.4	-2.5
NWA	3358	0	2	1.6	0.4	3377	0	3	0	7.1	0.5
OAE	62	2	6	2.4	-0.3	64	2	31	0	16.7	6.0

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
PAC	105	1	6	2.0	-0.3	111	0	6	0	9.1	1.6
RAM	34	0	3	1.7	-0.7	34	0	3	0	6.5	1.8
RCH	133	1	100	2.4	0.0	132	0	100	0	13.6	1.9
RJA	24	0	8	1.9	0.4	24	0	8	0	12.3	2.0
RRR	89	0	9	1.9	0.5	92	0	12	0	7.4	1.7
RZO	150	1	3	1.4	-0.3	150	0	3	0	8.2	0.0
SLR	74	3	14	1.3	0.6	77	0	12	0	6.2	0.2
SSV	51	0	6	1.5	-0.2	51	0	10	0	10.0	0.7
SVA	39	0	5	1.2	0.2	41	0	7	0	11.0	-0.4
SWR	23	0	9	2.1	-0.4	24	0	21	0	14.0	2.4
TAP	343	1	3	1.3	0.0	336	0	4	0	7.8	0.9
TPA	21	0	5	1.2	0.6	21	0	10	0	7.4	-0.2
TSC	347	1	10	2.7	0.8	359	0	6	0	7.9	1.2
TWA	83	0	4	1.7	0.3	83	0	4	0	10.0	1.6
UAL	760	0	100	1.7	-0.2	777	0	100	0	6.8	0.8
UPS	730	0	30	1.4	0.3	748	0	31	0	7.3	0.8
USA	175	0	2	1.3	0.2	154	0	1	0	6.0	1.2
VIR	284	1	2	1.6	-0.2	285	0	1	0	7.1	1.2
VPB	22	0	5	1.9	1.5	22	0	9	0	13.4	-0.1
WOA	116	2	9	1.6	0.7	119	1	9	0	8.0	1.5
YSS	21	0	5	1.6	1.1	21	0	10	0	10.6	-1.0
EU	21632	0	27	1.2	0.2	21632	0	26	0	4.8	0.5
KL	2118	0	37	1.4	0.9	2113	0	7	0	5.0	0.7
LH	608	0	6	1.4	1.0	608	0	6	0	4.9	0.9
TN	49	0	4	2.1	1.2	52	0	17	0	11.8	-1.8
N	335	1	3	2.0	0.7	359	0	4	0	8.2	1.2
US ACARS	23652	12	36	1.3	0.4	23652	0	26	0	5.3	0.7

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: September 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	100	10	0	4.6	31.6	31.3
DBBH	12	Z	100	10	0	7.9	28.9	27.8
DBLK	12	Z	100	1	0	0.0	5.0	5.0
ELML7	00	Z	100	20	0	12.0	35.6	33.5
ELML7	12	Z	100	22	0	11.9	42.1	40.4
FNOR	00	Z	100	14	0	8.5	37.6	36.6
FNOR	12	Z	100	13	0	9.6	37.1	35.8
FNOU	00	Z	100	14	0	24.9	45.7	38.3
FNOU	12	Z	100	12	0	9.0	34.1	32.9
FNPH	00	Z	100	6	0	8.9	34.2	33.0
FNPH	12	Z	100	12	0	17.1	34.2	29.6
FNRS	00	Z	100	10	0	10.5	28.6	26.6
FNRS	12	Z	100	10	0	8.2	27.1	25.8
LDWR	00	Z	100	29	0	9.3	14.0	10.4
LDWR	12	Z	100	29	0	10.0	12.0	6.7
OXYH2	00	Z	100	3	0	15.1	34.5	-31.0
OXYH2	12	Z	100	3	0	13.0	17.3	-11.3
V2XO	00	Z	100	5	0	9.5	34.3	33.0
V2XO	12	Z	100	4	0	8.5	27.6	26.3
WPKD	00	Z	100	3	1	1.7	13.8	13.7
WPKD	12	Z	100	1	3	0.0	266.0	266.0
WTEC	12	Z	100	9	0	19.8	55.9	52.3
ZCBP6	00	Z	100	8	0	32.3	39.6	23.0
ZCBP6	12	Z	100	8	0	26.5	43.7	34.8
03953	00	Z	100	28	1	11.7	40.0	38.3
03953	12	Z	100	30	0	11.4	35.7	33.8
04018	00	Z	100	28	0	9.2	20.8	18.7
04018	12	Z	100	29	0	14.5	23.2	18.1
04220	00	Z	100	28	0	9.3	14.2	10.8
04220	12	Z	100	29	0	9.8	16.5	13.3
04270	00	Z	100	26	0	23.5	23.5	-1.8
04270	12	Z	100	27	0	17.1	17.8	5.0
04339	00	Z	100	29	0	8.9	19.7	17.6
04339	12	Z	100	30	0	13.7	18.2	12.0
04360	00	Z	100	29	0	13.6	18.4	12.4
04360	12	Z	100	30	0	15.8	17.3	7.2
08001	00	Z	100	27	0	12.7	20.0	15.4
08001	12	Z	100	27	0	22.9	23.7	6.0
08508	00	Z	100	29	0	10.0	30.6	28.9
08508	12	Z	100	28	0	11.6	32.2	30.1
08522	00	Z	100	29	0	9.6	39.4	38.2
08522	12	Z	100	29	0	8.4	35.8	34.8
08594	12	Z	100	22	0	25.0	37.5	28.0
60020	00	Z	100	29	0	10.1	47.8	46.7
60020	12	Z	100	28	0	15.1	35.8	32.5
71600	00	Z	100	27	0	10.7	27.0	24.8
71600	12	Z	100	29	0	19.0	37.3	32.1
72201	00	Z	100	27	0	15.0	30.6	26.7
72201	12	Z	100	27	0	13.7	44.4	42.2
72402	00	Z	100	26	0	13.6	44.9	42.7
72402	12	Z	100	29	0	15.0	63.0	61.2
74494	00	Z	100	26	0	9.8	26.5	24.7
74494	12	Z	100	30	0	11.0	17.6	13.7
78016	00	Z	100	27	0	9.5	39.7	38.5
78016	12	Z	100	29	0	15.4	38.3	35.1

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: September 2001

Monitoring procedures:

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :500 hPa.

Element monitored :GEOPOTENTIAL HEIGHT in metres

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

```
 WMO  OBS              NUM    NUM
IDENT TIME ELM   LEV   OBS   GROSS      SD      RMS     BIAS

DBBH   00   Z    500    10     0       6.5     13.2     11.5
DBBH   12   Z    500    15     0       8.1     16.4     14.3
DBLK   12   Z    500     1     0       0.0     15.0     15.0
ELML7  00   Z    500    22     0       6.9     10.5      7.9
ELML7  12   Z    500    24     0       5.8     12.1     10.7

FNOR   00   Z    500    14     0       8.9     10.2      4.9
FNOR   12   Z    500    14     0       9.5     11.6      6.8
FNOU   00   Z    500    14     0      35.6     37.7     12.6
FNOU   12   Z    500    13     0      12.6     16.0      9.8
FNPH   00   Z    500     6     0       4.4      8.4      7.2

FNPH   12   Z    500    12     0      13.5     16.5      9.5
FNRS   00   Z    500    12     0       9.0      9.2      2.0
FNRS   12   Z    500    11     0       8.2     11.1      7.4
LDWR   00   Z    500    29     0       7.6      8.5      3.7
LDWR   12   Z    500    29     0       9.1      9.2      0.6

OXYH2  00   Z    500     3     0       9.9     34.5    -33.0
OXYH2  12   Z    500     3     0      10.1     15.5    -11.7
V2XO   00   Z    500     5     0      13.8     16.6      9.2
V2XO   12   Z    500     4     0       7.0      9.2      6.0
WPKD   00   Z    500     3     2       4.1      4.3     -1.3

WTEC   00   Z    500     1     0       0.0      7.0      7.0
WTEC   12   Z    500    10     0      14.6     22.6     17.3
ZCBP6  00   Z    500    10     0      19.2     19.5      3.3
ZCBP6  12   Z    500     8     0       5.7     12.8     11.5
03953  00   Z    500    28     1       6.7     14.7     13.1

03953  12   Z    500    30     0       7.7     16.4     14.5
04018  00   Z    500    28     0       9.7     13.2      9.0
04018  12   Z    500    30     0      11.0     13.3      7.4
04220  00   Z    500    28     0       9.2     10.5      5.1
04220  12   Z    500    29     0      12.0     13.4      6.0

04270  00   Z    500    27     0      12.6     12.6      0.8
04270  12   Z    500    29     0       8.2      9.5      4.9
04339  00   Z    500    29     0       8.3     17.0     14.8
04339  12   Z    500    30     0       7.8     13.4     10.9
04360  00   Z    500    29     0       8.3      9.3      4.2

04360  12   Z    500    30     0       8.8      8.9      1.3
08001  00   Z    500    28     0       9.8      9.9      1.6
08001  12   Z    500    28     0      11.4     11.4     -0.7
08508  00   Z    500    29     0       7.8      7.8      1.2
08508  12   Z    500    28     0       8.8     10.7      6.1

08522  00   Z    500    29     0       6.1      8.8      6.4
08522  12   Z    500    30     0       7.1     12.3     10.0
08594  12   Z    500    23     0       9.7     10.8     -4.7
60020  00   Z    500    29     0       7.7     10.8      7.6
60020  12   Z    500    29     0       9.3     11.0      6.0

71600  00   Z    500    27     0      13.8     13.8     -1.2
71600  12   Z    500    29     0      14.9     20.9     14.6
72201  00   Z    500    28     0       9.1     13.5      9.9
72201  12   Z    500    29     0       8.5     10.4      6.0
72402  00   Z    500    26     0       7.3     10.7      7.8

72402  12   Z    500    29     0       9.9     13.6      9.3
74494  00   Z    500    27     0       7.7     10.1      6.5
74494  12   Z    500    30     0       7.8      9.9      6.2
78016  00   Z    500    29     0       9.1     17.2     14.6
78016  12   Z    500    29     0      14.6     26.0     21.6
```

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: September 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in $m\ s^{-1}$
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	100	10	0	0	5.0	-0.3	-0.9
DBBH	12	V	100	10	0	0	4.8	-1.0	0.4
DBLK	12	V	100	1	0	0	1.3	-1.0	0.9
ELML7	00	V	100	18	0	0	4.0	0.4	-0.9
ELML7	12	V	100	21	0	0	6.7	0.3	-0.1
FNOR	00	V	100	13	0	0	4.5	-0.2	-0.3
FNOR	12	V	100	13	0	0	4.2	0.0	1.1
FNOU	00	V	100	14	0	0	4.7	-0.1	0.7
FNOU	12	V	100	13	0	0	3.8	-0.8	0.1
FNPH	00	V	100	4	0	0	4.9	-3.0	0.2
FNPH	12	V	100	11	0	0	5.1	-0.2	-0.2
FNRS	00	V	100	6	0	0	5.1	0.3	0.0
FNRS	12	V	100	9	0	0	5.0	-1.4	-1.2
LDWR	00	V	100	29	0	0	2.4	0.4	-0.1
LDWR	12	V	100	29	0	0	2.2	0.0	-0.3
OXYH2	00	V	100	3	0	0	3.5	-2.1	-0.2
OXYH2	12	V	100	3	0	0	1.9	-0.9	0.9
V2XO	00	V	100	4	0	0	3.4	0.1	-1.1
V2XO	12	V	100	3	0	0	4.7	-1.5	-0.2
WPKD	00	V	100	4	0	0	3.1	1.9	0.7
WPKD	12	V	100	2	0	0	6.4	1.9	3.3
WTEC	12	V	100	7	0	0	9.0	1.4	3.3
ZCBP6	00	V	100	6	0	0	3.5	-0.2	0.6
ZCBP6	12	V	100	3	0	0	2.6	-0.7	0.6
03953	00	V	100	29	0	0	2.8	0.3	-0.2
03953	12	V	100	30	0	0	2.3	0.3	-0.4
04018	00	V	100	28	0	0	3.2	-0.2	-0.6
04018	12	V	100	28	0	0	3.7	0.3	-0.2
04220	00	V	100	28	0	0	3.0	0.4	0.6
04220	12	V	100	28	0	0	3.3	0.9	-0.2
04270	00	V	100	26	0	0	4.2	-1.1	0.4
04270	12	V	100	25	0	0	4.3	0.1	0.0
04339	00	V	100	28	0	7	7.5	-0.5	0.6
04339	12	V	100	28	0	0	3.6	-0.2	0.7
04360	00	V	100	29	0	0	3.4	0.8	0.3
04360	12	V	100	30	0	0	2.8	0.2	-0.1
08001	00	V	100	27	0	0	3.8	0.9	1.3
08001	12	V	100	22	0	0	4.2	0.9	0.5
08508	00	V	100	12	0	0	3.9	0.0	1.0
08508	12	V	100	9	0	0	3.2	-1.3	0.1
08522	00	V	100	25	0	0	5.7	0.9	0.7
08522	12	V	100	27	0	0	3.6	-0.5	0.6
08594	12	V	100	23	0	100	4.7	-0.1	-0.2
60020	00	V	100	26	0	0	4.8	-1.0	1.4
60020	12	V	100	26	0	0	6.6	-0.1	0.3
71600	00	V	100	27	0	0	3.5	0.2	0.1
71600	12	V	100	29	0	0	4.0	1.1	0.7
72201	00	V	100	27	0	0	3.0	1.0	0.2
72201	12	V	100	27	0	0	2.8	-0.6	0.0
72402	00	V	100	25	0	0	3.3	0.4	-0.2
72402	12	V	100	29	0	0	4.2	0.0	0.9
74494	00	V	100	26	0	0	2.8	-0.2	0.0
74494	12	V	100	30	0	0	2.4	0.1	0.4
78016	00	V	100	27	0	0	4.5	0.3	-0.3
78016	12	V	100	29	0	0	3.5	-0.1	0.3

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: September 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	500	10	0	0	3.4	0.9	1.5
DBBH	12	V	500	13	0	0	3.5	0.5	0.0
DBLK	12	V	500	1	0	0	1.8	1.6	-0.8
ELML7	00	V	500	21	0	0	4.9	-0.2	-0.8
ELML7	12	V	500	21	0	0	4.1	0.1	-0.2
FNOR	00	V	500	14	0	0	3.6	-0.3	-0.5
FNOR	12	V	500	12	0	0	4.4	0.5	-0.3
FNOU	00	V	500	10	0	0	4.7	1.4	-0.2
FNOU	12	V	500	11	0	0	4.1	-1.3	0.5
FNPH	00	V	500	4	0	0	4.1	-2.5	2.3
FNPH	12	V	500	10	0	0	4.1	0.2	1.4
FNRS	00	V	500	7	0	0	2.8	-1.4	0.1
FNRS	12	V	500	9	0	0	5.9	3.1	1.2
LDWR	00	V	500	29	0	0	2.8	-0.2	-0.5
LDWR	12	V	500	29	0	0	3.4	0.1	0.4
OXYH2	00	V	500	3	0	0	5.6	-1.5	-3.6
OXYH2	12	V	500	3	0	0	3.3	1.1	0.6
V2XO	00	V	500	5	0	0	7.5	-2.0	0.2
V2XO	12	V	500	4	0	0	3.9	-0.9	-1.6
WPKD	00	V	500	4	0	0	4.3	-2.1	-0.7
WPKD	12	V	500	2	0	0	2.6	-2.4	0.6
WTEC	00	V	500	1	0	0	3.3	2.0	2.7
WTEC	12	V	500	9	0	11	7.7	4.2	1.6
ZCBP6	00	V	500	6	0	0	4.7	0.1	0.3
ZCBP6	12	V	500	6	0	0	4.7	0.1	0.9
03953	00	V	500	29	0	0	3.7	0.3	-0.3
03953	12	V	500	30	0	0	3.2	0.1	0.1
04018	00	V	500	28	0	0	4.5	0.0	-0.1
04018	12	V	500	29	0	0	4.6	0.4	0.1
04220	00	V	500	28	0	0	5.1	-0.9	-0.1
04220	12	V	500	29	0	0	4.1	0.1	-0.7
04270	00	V	500	27	0	0	3.9	0.0	0.2
04270	12	V	500	29	0	0	3.9	1.1	0.5
04339	00	V	500	28	0	0	4.4	-0.1	0.2
04339	12	V	500	30	0	0	4.4	-0.7	0.1
04360	00	V	500	29	0	0	4.4	0.5	0.0
04360	12	V	500	30	0	0	4.1	-1.8	0.3
08001	00	V	500	28	0	0	3.1	0.7	0.5
08001	12	V	500	25	0	0	3.7	-0.1	0.0
08508	00	V	500	13	0	0	4.2	-0.3	2.5
08508	12	V	500	11	0	0	3.4	-1.4	0.8
08522	00	V	500	29	0	0	3.6	0.8	1.0
08522	12	V	500	27	0	0	4.2	-0.2	0.5
08594	12	V	500	23	0	100	4.8	-0.8	-2.0
60020	00	V	500	28	0	0	3.0	-0.4	-0.1
60020	12	V	500	27	0	0	3.7	0.3	0.0
71600	00	V	500	27	0	0	5.1	0.8	0.1
71600	12	V	500	29	0	0	4.0	0.8	-0.3
72201	00	V	500	28	0	0	3.1	-0.2	-0.3
72201	12	V	500	29	0	0	3.8	-1.0	-0.8
72402	00	V	500	25	0	0	3.1	0.6	-0.2
72402	12	V	500	29	0	0	3.8	0.9	-0.2
74494	00	V	500	27	0	0	5.0	-0.2	-0.6
74494	12	V	500	30	0	3	4.2	0.4	-0.1
78016	00	V	500	28	0	0	4.5	0.8	0.6
78016	12	V	500	29	0	0	4.3	-0.2	0.7

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45